W. G. FARLOW

Journal of Mycology

VOLUME 9

W. A. KELLERMAN

COLUMBUS, OHIO
1903

DATES OF ISSUE

Pages 1-80 were issued February 14, 1903
Pages 81-160 were issued May 29, 1903
Pages 161-216 were issued October 29, 1903
Pages 217-262 were issued December 31, 1903

For Table of Contents of the several quarterly parts see pages 1, 81, 161 and 217 respectively.

Yours truly
M. G. Farlow

Journal of Mycology Portraits with Facsimile Autographs.

Journal of Mycology

VOLUME 9 — FEBRUARY 1903

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ZWEI NEUE PILZE AUS OHIO.

PH. DR. FRANCIS BUBAK, PRAGUE, BOHEME.

Bei der Bestimmung eines in Böhmen auf Equisetum elongatum gesammelten Pilzes zog ich auch das von Kellerman in "Ohio Fungi" No. 18 vertheilte Gloeosporium equiseti E. & E. zum Vergleich heran. Bei der Gelegenheit fand ich, dass mein Exemplar der genannten Nummer eine Stamnaria-Art ist, die sich von der europäischen Stamnaria equiseti (Hoffm.) Sacc., wie sie z. B. bei Rehm (1) beschrieben, odor von Bäumler (2) aus Ungarn und mir selbst (3) aus Böhmen vertheilt worden ist, in einigen wichtigen Characteren unterscheidet, so dass sie für eine neue Species gehalten werden muss. Ich erlaube mir die neue Art nach dem um die mykologische Flora Ohio's so hochverdienten Forscher zu benennen:

STAMNARIA..... (4) Apothecien gewöhnlich in kleinen Gruppen oder in kurzen Reihen gestellt, meist eingesenkt, dann hervorbrechend, anfangs geschlossen, kugelig, später becherför-

(1) Rehm; Ascomyceten, pag. 466 in Rab. Kryptog. Flora.
(2) Kryptogamæ exsiccatæ Nr. 628. Museum palat. Vindobonense.
(3) Vestergren; Micromycetes rariores Nr. 468.
(4) I take the liberty of withholding the name proposed, being convinced before the article is printed, that the species is the same as that very recently described by Massee & Morgan, namely Stamnaria ameri-

mig mit kurzem, dickem Stiele, 0.2-0.7 mm. im Durchmesser, orangegelb, glänzend, feucht wachsartig, weich, trocken hornartig fest. Asken *lang-keulenfoermig, nach unten allmaehlig aber stark verschmaelert, oben stumpf-spitzlich, 120-250 μ lang, 15-18 μ breit,* 8-sporig. Sporen länglich, ungleichseitig oder leicht gekrümmt, 22-33 μ *lang,* 4.5-6.5 μ *breit,* im oberen Theile des Schlauches 2-reihig, unten einreihig. Paraphysen so lang oder etwas länger als die Asken, dünn (1-1.5 μ), oben keulenförmig auf 2.5-4 μ erweitert.

Auf Equisetum robustum R. Br., bei Logan, Hocking county, Ohio, am 8 October 1894, legit Kellerman (Ohio Fungi, Nr. 18).

Von Stamnaria equiseti (Hoffm.) Sacc. durch die Form und Grösse der Asken, wie auch durch die Grösse der Sporen genügend verschieden.

In Saccardo Syllog. XVI findet sich von Stamnaria equiseti eine Varietät *herjedalensis* Rehm beschrieben. Diese Varietät wurde von Lagerheim in Schweden bei Tjellnaess in Herjedalia auf Equisetum variegatum gesammelt. Sie unterescheidet sich nach der Diagnose von der Stammart durch cylindrisch-keulenförmige, nur 50 μ lange, 5-6 μ breite Asken und ebenfalls durch kleinere, 10 μ lange, 3 μ breite Sporen.

Ich halte diese Varietät, ebenfalls wie die amerikanische Form, für eine selbständige Art, *Stamnaria herjedalensis* (Rehm).

Im J. 1901 sammelte ich in Montenegro (Balkanhalbinsel) auf Malva silvestris eine Cercospora-Art. Bei vergleichendem Untersuchen aller Althaea- und Malva-bewohnenden Cercospora-Arten, erwiesen sich der montenegrinische und der von Kellerman in Ohio, bei Columbus, auf Althaea rosea Cav. (Ohio Fungi, Nr. 64) gesammelte Pilz, als zwei neue, von Cercospora Althae-

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cana, cfr. Jour. Mycol. 8:183, Dec. 1902. Dr. Bubak's description was drawn up before the publication (Dec. 20) of Massee & Morgan's paper could have reached him. At the time of the present article going through the press, it was of course impossible to consult with Dr. Bubak relative to this matter, and I have therefore ventured to allow his valuable notes and diagnosis to appear, believing that he will pardon me for excluding temporarily the name which he kindly bestowed with reference to myself. I may also add that Professor Morgan's judgment coincides with mine in reference to the plant I sent out inadvertently under the name of Gloeosporium equiseti E. & E. (No. 18. O. F.)—considering it the same as the Stamnaria americana Mass. & Morg. He suggests also that greater range might be given to the measurement of asci and spores than that which Mr. Massee drew up — "say asci 150-175x12-16, spores 25-30x6-8."
W. A. KELLERMAN, *Editor.*

ina Sacc., Cerc. malvacearum Sacc. und Cerc. nebulosa Sacc. gut unterscheidbare Species.

Ich erlaube mir auch die letzgenannte Art zu Ehren des Herrn Prof. Dr. W. A. Kellerman zu nennen. Die Diagnose des montegrinischen Pilzes werde ich an anderem Orte veröffentlichen.

CERCOSPORA KELLERMANI Bubák n. sp.— Flecken auf beiden Blattseiten, unregelmässig, eckig, von den Blattnerven begrenzt, olivenbraun, undeutlich graulich umrandet, oft zusammenfliessend, bis 1 cm. im Durchmesser. Fruchtträger auf beiden Blattseiten, büschelweise, schlank, wenig verbogen, bis 150μ lang, 4-5μ breit, oft fast schon vom unteren ¼ — ⅓ entfernt gezähnt (bis 6 Zähne), mit 3-5 Querwänden, olivenbraun, manchmal an der Spitze heller. Conidien nadelförmig, 50-150μ lang, 4-5μ breit, mit 5-15 *Querwaenden*, gerade oder wenig gekrümmt, hyalin, gegen den Scheitel allmählich, schweifförmig verschmälert.

Auf Althaea rosea Cav., bei Columbus, Ohio, am 9 Juni 1901, legit Kellerman (Ohio Fungi, Nr. 64).

Cercospora kellermani ist am nächsten nur mit Cerc. malvacearum Sacc. verwandt, welche bei Rouen in Frankreich auf Malva moschata gesammelt wurde. Sie unterscheidet sich aber von derselben, als auch von Cerc. althaeina Sacc. durch vielzellige Conidien, von der letzgenannten Art auch durch längere Conidienträger.

Prague, am 16. December 1902.

LEPIDODERMA GEASTER (LINK.)

A. P. MORGAN.

Within my range, I not long ago met with a very interesting species of Myxomyces. Of the old descriptions, the one that fits it best is that of*Didymium geaster* Link, Obs. II, 1816. It is true that Rostafinski places this name as a synonym under *Chondrioderma radiatum* (L.), but this is only a surmise of his, and the judgment of Fries is better. Furthermore, Fries observes that this species recedes from *Diderma trevelyani* (Grev.) in that it grows on wood and not on mosses. Hence, it seems plausible

there are at least two species making the trouble with the specimens and possibly more than two.

The synonyms under *Chondrioderma trevelyani* given in Lister's Mycetozoa are:

1. Leangium trevelyani Greville, Crypt. Fl. 1825.
2. Diderma trevelyani Fries, Syst. Myc. 1829.
3. Chondrioderma œrstedtii Rostafinski, Mon. 1875.
4. Diderma geasteroides and D. laciniatum, Phillips, Grevillea, 1877.
5 Chondrioderma geasteroides Massee, Mon. Myx. 1892.

Rostafinski makes two species of 1, 2 and 3, *Ch. trevelyani* with a columella and *Ch. oerstedtii* without a columella. Massee confirms the species of Rostafinski and adds a third, *Ch. geasteroides,* to include Phillips's two Californian species; this has a columella.

I may here remark that the British Jedburgh specimen is not the type of *Ch. oerstedtii* as stated by Lister; this author's use of *type* is very loose. Lister combines all these 1, 2, 3, 4, 5 into a single species; he says the sporangium wall is composed of "three inseparable layers," which is an absurdity upon the face of it; and he finds no columella in any of the specimens.

Now as to my specimen: It consists of more than one hundred sporangia, of which about half are split open, growing on a piece of wood. The dry mature sporangium is polyhedral in shape, the lines of dehiscence along the edges being paler in color; it splits from the apex downward into several open or spreading segments, sometimes the polygonal apex is torn off and adheres to one of the segments.

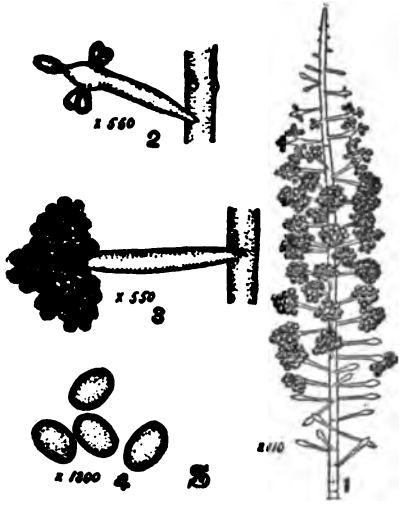
The wall is thick composed of a dense layer of glossy scales connate with the membrane, the surface of which is verrucose within and without, the outer surface pale umber, the inner glossy-white. The stipe is very short, slender, concolorous or nearly obsolete; the columella elliptic-oblong, verrucose, usually ejected along with the spore-mass at the time of dehiscence of the sporangium. I can, however, count many columellas remaining at the bottom of the open sporangia, though they are all clean of spores. The capillitium consists of slender, branched, dark-colored threads, forming a scanty network. The spores are globose, smooth (x 500), purplish-brown, 13-16 mic. in diameter.

The line in the wall of the sporangium seems to me of the same nature as in the genus Lepidoderma.

A NEW SPECIES OF CEPHALOSPORIUM.

W. A. KELLERMAN.

A quantity of conspicuous conidiophores was noticed on a single dead stem in the greenhouse of the Botanical Department, Ohio State University. This was subjected to examination but its identification with any described species was not satisfactory and accordingly the material was placed in the hands of Mr. J. B. Ellis for inspection, who pronounced it an undescribed species of Cephalosporium. A drawing to illustrate the appearance and structure was made with the aid of the camera by J. G. Sanders, the figures 1, 2-3, and 4 being magnified 110, 550, and 1300 diameters respectively, but reduced to one-half these dimensions by the engraver. The description of the species is as follows:



CEPHALOSPORIUM DENDROIDES E. & K. — On dead herbaceaous stems in a greenhouse (Ohio; Kellerman, 3982).

Sterile hyphæ inconspicuous; fertile hyphæ erect, continuous, hyaline, about 1 mm. high, and 6-7 μ thick, sending out from the upper half of their length numerous short branches at right angles with the central erect hyphæ, narrowed below, their tips swollen and bearing the elliptical or oblong-elliptical, hyaline, 4-6 x 2-3 μ conidia in a loosely compacted head. The fertile hyphæ stand scattered singly and with their numerous branches bearing the snow-white conidia resemble a miniature forest after a snow storm.

Corresponds to *Stachylidium* in the Dematieæ.

UREDINEOUS INFECTION EXPERIMENTS IN 1902.[1]

W. A. KELLERMAN.

([2]) A series of sixty-seven experiments were carried on in 1902, beginning April 7 and ending June 24. All were performed with host-plants previously transferred to the greenhouse, and were at the time of attempted inoculation, with few exceptions, in a satisfactory growing condition. Plants not removed from their natural habitat were used later in the season in a very few cases, but the method of procedure in the experiments was the same as that followed in the greenhouse.

Seventeen forms of Uredines were used in the inoculations. Of these seven yielded satisfactory results. In a case of two so meagre evidence was obtained that it is best to regard them, if artificial inoculations at all, at least as undecisive.

Infections were made in the usual way, namely by moistening the supposed host-plant by means of an atomizer; then depositing on the tender growing portions a quantity of the spores supposed to be viable. The plants were immediately covered with a bell-jar or suitable substitute therefor — this removed daily or oftener, but only long enough to repeat the use of the atomizer. After ample time for germination of the spores the covers were discarded.

Precautions were taken to guard against possible accidental infection. Spores of only one Rust species were used on any one day, and so far as practicable scalpels, forceps, camel's-hair brushes, and watch crystals were used but once; or if again needed were called into requisition only after thorough cleansing and disinfection.

At any one part of the work table or bench in the greenhouse, inoculations were never made with more than one species of Rust. It was feasible to carry on the work in different places, as in different sections of the greenhouse, different laboratory rooms, etc. This was believed to be a safeguard — possibly over cautious — against accidental infection.

In the earlier experiments a cover for the host-plant, a cylinder 18 to 20 inches high made of coarse wire netting and surrounded with muslin, was very satisfactory. Later, when the greenhouse was more freely ventilated, the evaporation was too rapid, and bell-jars or suitable frames made of narrow strips of galvanized iron with glass sides and tops were substituted. The plants were usually kept covered 3 or 4 days — or even 5 or 6

([1]) Contributions from the Botanical Laboratory of the Ohio State University. XI.

([2]) The substance of this paper was presented before the Botanical Society of America, Jan. 1, 1903, under the title Uredinous Infection: Suggestions and Experiments.

days, a longer period than most experimenters consider necessary.

It is thought by some who have carried on uredinous inoculations extensively, that infection work in advance of the normal season of the parasitic species is fruitless effort. This is perhaps true in many cases, but my experiments with Puccinia atkinsoniana shows that it may be profitable. With this species inoculations were made on Sambucus canadensis April 7, the host-plant having been transplanted to the greenhouse January 10. The old leaves of Carex lurida harboring the teleutospores, exposed in their natural habitat all winter, were placed in the warm greenhouse a month and a half in advance of their use. Evidences of successful inoculation were noticeable April 15. By this early success it was possible to verify the result by repetitions of the experiment, as was done April 19 with corroborative result, also again April 25 with similar outcome, and for the fourth time — on host-plants growing out of doors — May 15, with a quadruply conclusive result. Using the teleutospores of Puccinia bolleyana on Sambucus canadensis in the greenhouse April 24, spermogonia and æcidia were obtained. This experiment was repeated May 24 on plants growing out of doors and in due time the former result was corroborated.

By this pre-season inoculation when possible, the correctness of first results can be verified the same year. This is advantageous — especially in the remarkable case cited above where apparently similar æcidia have been obtained on Sambucus by sowing spores of — as heretofore understood — two morphologically different species.

The experiments enumerated below include failures as well as successes. The latter can be repeated for verification and the former may to some extent, perhaps, be a guide to other experimenters. When work on the American species has been more extensively performed, the literature can doubtless be saved the burden of so numerous failure-records. It may yet be profitable, perhaps, to undertake more or less work with barely perceptible or vaguely suspected clues, though the advantage of experiment with previously observed evidence or very strong hints of relationship is fully appreciated.

PUCCINIA ATKINSONIANA DIET. (*) FROM CAREX LURIDA.

Exp. 1. April 7. Teleutospores sown on Sambucus canadensis.
— Spermogonia appeared April 15; aecidia April 24.

Exp. 2. April 19. Teleutospores sown on Sambucus canadensis.
— Spermogonia April 25; aecidia April 30.

Exp. 3. April 19. Teleutospores sown on Sambucus canadensis.
— Spermogonia April 25; aecidia April 30.

(*) Puccinia sambuci (Schw.) Arthur n. n., Bot. Gaz. 35:15. Jan. 1903.

Exp. 5. April 25. Teleutospores sown on Sambucus canadensis.
— Aecidia May 7.
Exp. 6. April 25. Teleutospores sown on Onagra biennis.
— No infection.
Exp. 7. April 27. Teleutospores sown on Impatiens biflora.
— No infection.
Exp. 8. April 27. Teleutospores sown on Urtica gracilis.
— No infection.
Exp. 32. May 7. Teleutospores sown on Sambucus canadensis.
— Spermogonia May 14; aecidia May 24.
Exp. 33. May 7. Teleutospores sown on Onagra biennis.
— No infection.
Exp. 44. May 14. Teleutospores sown on Sambucus canadensis.
— Spermagonia May 23; aecidia May 26.
Exp. 45. May 14. Teleutospores sown on Sambucus canadensis.
— Spermogonia May 23; aecidia May 26.

It will be seen from the above that, using the teleutospores of Puccinia atkinsoniana, successful inoculation followed only when the Elder (Sambucus canadensis) was used as the host — Onagra biennis, Impatiens biflora, and Urtica gracilis not being susceptible. The Rust was identified by Dr. J. C. Arthur, who informed me that it had been compared with the type. In spite of the fact that I had early in the winter entertained the opinion, based on field observation, that the alternate form of this Rust was the Aecidium on Elder, the result of the first inoculation (Exp. 1) was a matter of much astonishment, because in the meantime it had been learned that æcidia on Elder had been obtained, by Dr. Arthur, by sowings of teleutospores of Puccinia bolleyana Sacc. from Carex trichocarpa (cfr. Jour. Mycol. 8:55, June 1902). Believing that a mistake might perhaps in some way have occurred, additional experiments were instituted in the greenhouse, namely, Expts. 2 and 3 above. The result was a duplication of the first. The same can be said of Exp. 5, still later carried on. I could scarcely maintain a skeptical attitude in the case longer, yet it was determined to perform the work once again. This time it was decided to select host-plants growing out of doors in a neighboring grove. The decisive results again obtained, see Expts. 44 and 45, could allow no possible doubt — especially since the numerous unprotected plants, adjacent as well as at a distance, were entirely free from æcidia. Finally it may be said that the æcidia obtained by the inoculations were apparently the form ordinarily designated as Aecidium sambuci Schw.

PUCCINIA BOLLEYANA SACC.(4) FROM CAREX TRICHOCARPA.

Exp. 4. April 24. Teleutospores sown on Sambucus canadensis.
— Few spermogonia May 1; few aecidia May 14.
Exp. 46. May 14. Teleutospores sown on Sambucus canadensis.
— Few spermogonia May 23; few aecidia May 26.

(4) Puccinia sambuci (Schw.) Arthur n.n. Bot. Gaz. 35:15. Jan. 1903.

Exp. 47. May 14. Teleutospores sown on Sambucus canadensis.
— Few spermogonia May 23; few aecidia May 26.

It will be observed that teleutospores of Puccinia bolleyana Sacc. from Carex trichocarpa, kindly furnished me for culture by Dr. Arthur from the type locality in Indiana, as well as of Puccinia atkinsoniana Diet. from Carex lurida infect the Elder (Sambucus canadensis); no differences were observed in the resulting æcidia. But this is a subject for further study.(5) As stated above, Dr. Arthur has previously reported successful infection using the same species of parasite and host. Cfr. Jour. Mycol. 8:55, June 1902.

PUCCINIA PECKII (DETONI) KELLERM. (P. CARICIS AUCT.) FROM CAREX TRICHOCARPA.

Exp. 14. April 29. Teleutospores sown on Sambucus canadensis.
— No infection.
Exp. 15. April 29. Teleutospores sown on Urtica gracilis.
— No infection.
Exp. 16. April 29. Teleutospores sown on Impatiens fulva.
— No infection.
Exp. 26. May 4. Teleutospores sown on Onagra biennis.
— Spermogonia and immature aecidia. (Host failed in health and died.)
Exp. 27. May 4. Teleutospores sown on Impatiens biflora.
— No infection.

Sowings on one host only, namely, the Common Evening Primrose (Onagra biennis) were successful; the æcidia known as Ae. peckii DeToni (*Ac. oenotherae* Peck) therefore is the alternate form of the rust on Carex trichocarpa previously designated as Puccinia caricis, and the name to be used is Puccinia peckii (DeToni) Kellerm. This was published May 31, 1902 (Jour. Mycol. 8:20, May 1902.)

PUCCINIA CARICIS (SCHUM.) REB. FROM CAREX RIPARIA.

Exp. 18. April 30. Teleutospores sown on impatiens biflora.
— No infection.
Exp. 19. April 30. Teleutospores sown on Pentstemon pubescens.
— No infection.
Exp. 20. April 30. Teleutospores sown on Rumex crispus.
— No infection.
Exp. 21. April 30. Teleutospores sown on Sambucus canadensis.
— No infection.
Exp. 22. April 30. Teleutospores sown on Onagra biennis.
— No infection.
Exp. 23. April 30. Teleutospores sown on Urtica gracilis.
— Abundant aecidia May 8.

(5) Cfr. Bot. Gazette, 35:15. Jan. 1903. The paper of Dr. Arthur here referred to was received while my article was going through the press. He says, "These discoveries led to a careful microscopic study of the two Carex rusts, and there appears to be no reason to question that *P. atkinsoniana* and *P. bolleyana* are identical. In the designation of the species it seems necessary on grounds of priority to abandon both these names, however, and it becomes *Puccinia sambuci* (Schw.) Arthur n. n."

Experiment 23 demonstrated the correctness of the identification of the Rust (Puccinia caricis [Schum.] Reb.) on Carex riparia, whose alternate form is Aecidium urticæ Schum.

PUCCINIA CARICIS (SCHUM.) REB. FROM CAREX STRICTA.

Exp. 24. May 2. Teleutospores sown on Urtica gracilis.
— Abundant aecidia May 15.
Exp. 25. May 2. Teleutospores sown on Impatiens biflora.
— No infection.

The above experimentally verifies the identification of the common Rust on Carex stricta, its æcidial form being Aecidium urticæ Schum.

PUCCINIA ANDROPOGONIS SCHW. FROM ANDROPOGON SCOPARIUS.

Exp. 11. April 26. Teleutospores sown on Pentstemon hirsutus.
— Spermogonia May 10. (Host killed by Damping-off.)

The material for making the inoculation was kindly furnished by Dr. J. C. Arthur, Lafayette, Indiana. The result is a corroboration of work previously done by him.

PUCCINIA WINDSORIÆ SCHW. FROM TRICUSPIS SESLERIOIDES.

Exp. 36. May 11. Teleutospores sown on Impatiens biflora
— No infection.
Exp. 39. May 11. Teleutospores sown on Lycopus sinuatus.
— No infection.
Exp. 40. May 11. Teleutospores sown on Pentstemon pubescens.
— No infection.
Exp. 41. May 11. Teleutospores sown on Ptelea trifoliata.
— Abundant spermogonia May 19; aecidia May 25.
Exp. 42. May 11. Teleutospores sown on Ptelea trifoliata.
— Spermogonia May 18; aecidia May 25.
Exp. 43. May 11. Teleutospores sown on Ptelea trifoliata.
— Spermogonia May 18; aecidia May 25.

Thanks are extended to Dr. J. C. Arthur for the culture material and for the host plants used in Experiments 42 and 43. The results obtained when the teleutospores were sown on Ptelea trifoliata corroborate the work by the same experimenter. The æcidia obtained were not only excessively abundant but spore-formation continued vigorously for about three weeks.

ÆCIDIUM OSMORRHIZÆ PECK FROM WASHINGTONIA CLAYTONI (OSMORRHIZA BREVISTYLIS.)

Exp. 9. April 26. Aecidiospores sown on Chaerophyllum procumbens.
— Teleutospores May 17.
Exp. 10. April 26. Aecidiospores sown on Chaerophyllum procumbens.
— No infection.
Exp. 13. April 27. Aecidiospores sown on Chaerophyllum procumbens, out doors.
— No infection.
Exp. 28. May 5. Aecidiospores sown on Washingtonia claytoni.
— No infection.

Exp. 29. May 5. Aecidiospores sown on Washingtonia claytoni.
— A few sori May 30. (Was this accidental?)
Exp. 30. May 5. Aecidiospores sown on Washingtonia claytoni.
— No infection.
Exp. 31. May 5. Aecidiospores sown on Washingtonia claytoni.
— No infection.

Though apparent success attended some of the above experiments, none are considered satisfactory. While there is perhaps no doubt but that the Rust is the same on Chærophyllum and Osmorrhiza, American Uredinists have not to my knowledge made cultures for demonstration.

The eight forms of spores so far named in the above list of experiments have yielded positive results (though doubtful in the case last cited above). All those that follow gave negative results; none of these need comment however except the first below, namely, that of Puccinia peckii (DeToni) Kellerm.

PUCCINIA PECKII (DETONI) KELLERM. FROM CAREX TRICHOCARPA.

Exp. 34. May 8. Teleutospores sown on Lycopus sinuatus.
— No infection.
Exp. 35. May 8. Teleutospores sown on Onagra biennis.
— No infection.
Exp. 36. May 8. Teleutospores sown on Sambucus canadensis.
— No infection.
Exp. 37. May 8. Teleutospores sown on Senecio obovatus.
— No infection.

It is not explicable that failure should have resulted in case of Experiment 35. But the teleutospores used were not from the same locality as that for the material used in the third set of experiments (No. 26 being successful); the locality was a mile distant and the spores seemed to differ a little in size from the former material. Further study will be devoted to this case. The host was not vigorous which may possibly explain failure when spores of Aecidium sambuci were used.

UROMYCES ANDROPOGONIS TRACY FROM ANDROPOGON VIRGINICUS.

Exp. 61. May 31. Teleutospores sown on Cimicifuga racemosa.
— No infection.
Exp. 62. June 21. Teleutospores sown on Cimicifuga racemosa.
— No infection (but the host plant not vigorous).

PUCCINI EMACULATA SCHW. ON PANICUM CAPILLARE.

Exp. 53. May 20. Teleutospores sown on Lycopus sinuatus.
— No infection.
Exp. 54. May 20. Teleutospores sown on Impatiens biflora.
— No infection.
Exp. 55. May 20. Teleutospores sown on Boehmeria cylindrica.
— No infection.
Exp. 56. May 20. Teleutospores sown on Ptelea trifoliata.
— No infection.

Exp. 57. May 20. Teleutospores sown on Sambucus canadensis.
— No infection.
Exp. 60. May 25. Teleutospores sown on Impatiens biflora.
— No infection.

PERIDERMIUM PINI WALLR. FROM PINUS RIGIDA.

Exp. 48. May 18. Aecidiospores sown on Lycopus sinuatus.
— No infection.
Exp. 49. May 18. Aecidiospores sown on Senecio obovatus.
— No infection.
Exp. 50. May 18. Aecidiospores sown on Senecio obovatus.
— No infection.
Exp. 51. May 18. Aecidiospores sown on Pentstemon pubescens.
— No infection.
Exp. 52. May 18. Aecidiospores sown on Aster sagittifolius.
— No infection.
Exp. 59. May 22. Aecidiospores sown on Solidago flexicaulus, out doors.
— No infection.

UREDO CHÆROPHYLLI FROM CHÆROPHYLLUM PROCUMBENS.

Exp. 12. April 27. Uredospores sown on Washingtonia Claytoni, (Osmorrhiza brevistylis), out doors.
— No infection.

ÆCIDIUM URTICÆ SCHUM. FROM CAREX RIPARIA.

(obtained by inoculation.)

Exp. 58. May 21. Aecidiospores sown on Carex riparia.
— No infection.

ÆCIDIUM NESÆÆ GER. FROM DECODON VERTICILLATUS.

Exp. 64. June 22. Aecidiospores sown on Carex frankii.
— No infection.
Exp. 65 June 22. Aecidiospores sown on Carex asa-grayi.
— No infection.

AECIDIUM ACTÆÆ OPIZ. FROM ACTÆA ALBA.

Exp. 62. June 21. Aecidiospores sown on Agropyron repens, in greenhouse.
— No infection.
Exp. 63. June 21. Aecidiospores sown on Agropyron repen , out doors.
— No inoculation.

ÆCIDIUM SAMBUCI SCHW. FROM SAMBUCUS CANADENSIS.

Exp. 66. June 24. Aecidiospores sown on Carex lurida.
— No infection.
Exp. 67. June 24. Aecidiospores sown on Carex lurida.
— No infection.

SUMMARY OF SUCCESSFUL INOCULATIONS WITH TELEUTOSPORES.

1. Puccinia atkinsoniana Diet. from Carex lurida Wahl.; sowings on Sambucus canadensis produced spermogonia and æcidia.

2. Puccinia bolleyana Sacc. from Carex trichocarpa Muhl. (Indiana); sowings on Sambucus canadensis sparingly produced spermogonia and æcidia.

(See foot-note (5) on previous page.)

3. Puccinia peckii (DeToni) Kellerm., P. caricis Auct., from Carex trichocarpa Muhl.; sowings on Onagra biennis (L.) Scop. (Oenothera biennis L.) produced abundant spermogonia and æcidia.

4. Puccinia caricis (Schum.) Reb. from Carex scoparia Schk.; sowings on Urtica gracilis produced abundant æcidia.

5. Puccinia caricis (Schum.) Reb. from Carex stricta Lam.; sowings on Urtica gracilis produced abundant æcidia.

6. Puccinia andropogonis Schw. from Andropogon scoparius Mx. (Indiana); sowings on Pentstemon produced spermogonia. (Host killed by Damping-off fungus).

7. Puccinia windsoriæ Schw. from Tricuspis (Sieglingia) seslerioides (Mx.) Torr. (Triodia cuprea Jacq.); sowings on Ptelea trifoliata L. produced abundant spermogonia and æcidia.

NOTES ON SCLEROSPERA GRAMINICOLA.

FRANK LINCOLN STEVENS.

This peculiar fungus began its history in America under the name of *Peronospora graminicola,* being apparently first collected by Pammel at LaCrosse, Wis., a communication to Farlow of Trelease, who noted it in the Botanical Gazette, 9:39, in 1884. Next we find it mentioned by Halsted both in the Bulletin of the Botanical Dept. of Iowa Agricultural College, April 8, p. 53 and in the Botanical Gazette 11:272, with the statement of its great abundance. Again by the same writer in the bulletin of Ia. Ag. Coll. '88, p. 99 and in the Bot. Gaz. 13:56, with the remark that it is about one tenth as abundant as two years previous. Since then it has been recorded in several western states. It was not, however, until the summer of 1901 that I was aware of its abundance in the east. Collecting trips in central New York then showed the fungus not only abundant but quite destructive to the Pigeon grass, Ixophorus viridis (L) Nash. It was so conspicuous and so abundant that it might be seen at almost any time from the carriage and was of particular destructive form. It could be followed for miles on the bicycle track between Baldwinsville and Syracuse where the over arching grasses had evidently afforded facilities for the spread of the fungus by means of the scorcher's boots and pedals.

Sclerospora was collected from the following localities in New York; Amboy, Van Buren, Syracuse, Ionia, Plainsville, Baldwinsville, Warners, Geddes, Long Branch and Cross Lake.

North Carolina College of Agriculture, Raleigh.

A NEW SPECIES OF CALOSTOMA.

BY GEO. F. ATKINSON.

During the autumn of 1902 I received several different species of fungi from Miss M. S. Percival, Rugby, Tenn. Among them were several interesting species of *Calostoma.* Among the first lot sent were four specimens of *Calostoma lutescens* (Schw.) Burnap, and several specimens of *Calostoma ravenelii* (Berk.) Masęe. Miss Percival had correctly recognized *C. lutescens,* from the pale yellow inner surface of the exoperidium as it peels off. Although she made diligent search for *C. cinnabarinum** Desv., she found no specimens. Having never before seen *C. lutescens* and having never before examined the spores of *C. ravenelii,* although I had collected during September, 1901, in the mountains of North Carolina, what I took to be this species, I requested from Miss Percival additional material. The second lot received December 5th, contained one more specimen of *C. lutescens,* no specimens of *C. cinnabarinum,* but quite a number of specimens of *C. ravenelii.* Among these there seemed to be great variations in size, the foot stalk varying in length from 1 cm. up to 6 cm. and all the specimens showing numerous adherent warts over the middle and lower portion of the inner peridium. This seemed at the time, quite a remarkable feature of *C. ravenelii,* since all writers state that the foot stalk is short.

On examining the spores of some of the larger specimens, I observed that they were smooth as in *C. ravenelii,* but smaller. At the time I was not especially impressed by this fact, and yet I found that it was constantly recurring to my mind. On January 9th, 1903 I undertook a careful examination of the material and was surprised to find that the specimens with the short foot stalk had large and very variable spores, while those with the long foot stalk had small and little variable spores. At first I thought it would be impossible to separate the two kinds without an examination of the spores. But after some study, I found it quite easy in most cases to separate them by the gross characters alone, even those in which the foot stalk was intermediate, i. e. of the same length in the two species.

The plant with the longer foot stalk and smaller spores I will call *Calostoma microsporum.* The spores are usually oblong, smooth, more rarely elliptical and measure from 6-9 x 3.5-4.5, rarely reaching 10 μ long and 5 μ wide. Burnap, Botanical Gazette, Vol. 23, page 190, 1897, gives no measurement for the spores of *Calostoma ravenelii,* but merely says, "spores elliptical, oblong, smooth." Massee, Ann. Bot. Vol. 2, page 48, 1888, gives the measurement and says: "spores elliptical to oblong, smooth,

*If the earlier specific name given by Persoon is retained this plant would be called *Calostoma callostoma* (Pers.)

colorless, 15-17 x 8-9." While the spores agree, therefore, in the two species in being smooth, and elliptical to oblong, or oblong to elliptical, there is a distinct difference in the size. The spores of *C. ravenelii,* in the specimens from Tennessee and also North Carolina, which I have examined, vary a great deal in size and also in shape, while those of *C. microsporum* do not show such great variations. A study of a single mount from one specimen of *C. ravenelii* from Tennessee gives the following measurements for individual spores; 6 x 7, 6 x 17, 10 x 15, 10 x 21, 12 x 16, 16 x 16, 15 x 18, 19 x 21. In a single mount of *C. ravenelii* from North Carolina the following measurements are taken: 6 x 7, 8 x 10, 12 x 22, 5 x 20. The larger number of the spores, however, in both cases are elliptical, and measure from 10-16 x 5-7. In some specimens nearly all are elliptical. The specimens of *C. ravenelii* from North Carolina which I have examined are those collected by myself on September 17th, 1901, along the roadside between Burnsville and Spruce Pine, at an altitude of about three thousand feet. They were growing in clay soil which contained a large amount of mica particles intermixed. They were the first specimens I had ever seen, although I had collcted on the higher elevation at Blowing Rock, large numbers of *Calostoma cinnabarinum* during several seasons. At the time I collected the specimens of *C. ravenelii* it was raining hard. While returning from the Black mountains, a small patch of these plants growing by the roadside at once attracted my attention, and so different were they in size and in general appearance from *C. cinnabarinum* I felt they must be *C. ravenelii.* The spores were not studied until the autumn of 1902. These plants vary from 1-4 cm. high, the foot stalk from .5-3 cm. high. The dehiscence of the exoperidium is somewhat variable, in some specimens quite large patches separate from the inner peridium only remaining slightly attached, especially toward the apex, the patches of the exoperidium often become entirely free, leaving a smooth area around the mouth. The middle and lower half of the inner peridium in these cases is then covered with a few large scaly warts, or in a few cases with a large number of smaller ones. In some specimens the entire endoperidium is covered, except here and there are exposed places where the outer peridium has cracked and become partially free. In the specimens from Tenessee of *C. ravenelii,* the plants vary from 2-4 cm. high, the foot stalk from 1-3 cm. long. Nearly all of the specimens show a smooth area over the upper part of the inner peridium around the mouth, while on the lower and middle part there is in almost all cases a large number of smaller warts.

In *C. microsporum,* the gross characters of the plants resemble very much those of *C. ravenelii,* except as stated above. On the average the foot stalk is longer, ranging from 3 cm. to 6 cm. and the peridium is somewhat larger. The smaller specimens of *C. microsporum,* however, are very near in size to the

larger specimens of *C. ravenelii.* In fact, it might be said, as far as the size is concerned, in these forms which might be termed intermediate, there is no difference. Yet, with the number of the plants mixed as they were in the collection, after having studied a few of each kind, I was able to separate the remainder into two lots and all of those I examined thus separated by the eye, agreed in microscopic characters with those which had formerly been examined representing each species. The specimens of the same size in the two species do show, even in the dry specimens, some slight differences, which can be seen better than described. In the first place the inner peridium of *C. ravenelii* is lighter in color than that of *C. microsporum,* although in some cases there is scarcely any difference. In the second place, the mouth of *C. ravenelii* is not quite so prominent as that in *C. microsporum.* In the latter, the teeth are larger, longer, and as far as I have examined, are only vermilion colored on their inner faces. In *C. ravenelii,* however, in many specimens, the outer face of the teeth is vermilion as well as the inner face. In some specimens, however, this is not the case, only the inner face is vermilion in color, but then as above stated, the teeth are usually not so prominent. This comparison has been made only with the specimens of the two species from Tennessee. All of the specimens which I have collected in North Carolina were much lighter in color. All of these show the less prominent teeth, and in many specimens the teeth are vermilion color without and within.

The specimens of *C. ravenelii* from Tennessee resemble very much *Calostoma lurida* (Berk.) Massee from Australia, (Ann. Bot. Vol. 2, p. 43-44, figs. 19-20, 1888.) The resemblance is shown in the size of the plant and general size of the spores, and in the fact that the exoperidium breaks up into small blackish granules over the middle and lower portion. In *C. lurida,* however, there is no vermilion color. The inner faces of the teeth as well as the edges being black.

This new species should be looked for and carefully studied in the field in the fresh condition. It is quite likely that still additional characters might be observed. The following preliminary diagnosis will serve to characterize the species:

CALOSTOMA MICROSPORUM Atkinson n. sp. Plants 4-7 cm. high, foot stalk 3-6 cm. by 1-2 cm., cylindrical or ventricose or enlarged below, sometimes compressed, rarely two foot stalks joined throughout the entire length. Peridium oval, 10-15 mm. broad; teeth 5-7, prominent, vermilion colored on their inner faces; exoperidium separating into numerous small hard adherent warts, covering the middle and lower surface of the endoperidium, usually entirely separating from the upper surface leaving a smooth area on the inner peridium around the mouth. Spores white, smooth, oblong, some rarely elliptical, 6-10 x 3.5-5 μ. Pro-

toplasm usually homogeneous, sometimes granular, often showing a tendency to be constricted at the middle, perhaps because of a clear area at this point. Rugby, Tennessee. Collected by M. S. Percival, 1902.

Botanical Department, Cornell University.
January 9, 1903.

OHIO FUNGI. FASCICLE VI.

W. A. KELLERMAN, OHIO STATE UNIVERSITY.

The following species are included, occuring on the hosts named:—

101. Coniosporium arundinis (Corda), Sacc., on Phragmites phragmites (L.) Karst.
102. Melasmia hypophylla (B. et Rav.) Sacc., on Gleditsia triacanthos L.
103. Mollisia dehnii (Rabenh.) Karst., on Potentilla monspeliensis L.
104. Peridermium pini Wallr., on Pinus rigida Mill.
105. Polyporus resinosus (Schrad.) Fr., on rotten wood.
106. Puccinia fusca (Pers.) Winter, on Anemone quinquefolia L.
107. Puccinia helianthi Schw., on Helianthus ambiguus (T. & G) Britt.
108. Puccinia muhlenbergiae Arth. & Holw., on Muhlenbergia mexicana (L.) Trin.
109. Puccinia muhlenbergiae Arth. & Holw., on Muhlenbergia diffusa Willd.
110. Puccinia myrrhis Schw., on Washingtonia claytoni (Mx.) Britt.
111. Puccinia myrrhis Schw., on Chaerophyllum procumbens (L.) Crantz.
112. Puccinia myrrhis Schw., on Chaerophyllum procumbens (L.) Crantz.
113. Puccinia myrrhis Schw., on Washingtonia claytoni (Mx.) Britt.
114. Puccinia myrrhis Schw., on Washingtonia longistylis (Torr.) Britt.
115. Puccinia polygoni-amphibii Pers., on Polygonum emersum (Mx.) Britt.
116. Pucciniastrum agrimoniæ (DC.) Diet., on Agrimonia parviflora Soland.
117. Septoria œnotheræ (Lasch) West., on Onagra biennis (L.) Scop.
118. Septoria verbascicola B. & C., on Verbascum blattaria L.
119. Uromyces burrillii Lagerh., on Scirpus fluviatilis (Torr.) Gr.
120. Uromyces toxicodendri Berk. & Rav., on Rhus radicans L.

Thanks are extended to the numerous mycologists who in various ways have kindly assisted in preparing the data for labels and determining material. Credit on each label is given the collector.

Corrections (or new labels) are included for Nos. 1, 3, 18, 64, and 88, previously issued.

The date of issue of Fascicle VI, Nos. 100-120, is Feb. 14, 1903.

101. Coniosporium arundinis (Corda) Sacc.

On Phragmites phragmites (L.) Karst.
Columbus, Ohio. Aug. 6, 1902.
Coll. W. A. Kellerman.

"Coniosporium arundinis (Cda.) sacc.
Gymnosporium.
"1. G. arundinis: Taf. VIII. fig. 1. immersum, dein denudatum lividum; sporis ovalibus lentiformibus vel subrotundis, margine depresso diaphano luteo–livido, nucleo obovato vel globoso convexo fusco. Magnit. spor. 0,000250 p. p.
Wohnt auf fäulenden Rohr- und Grasshalmen im Frühjahr; Kre bei Prag." A. C. I. Corda. Icones Fungorum Hucusque Cognitorum, 2:1. 1838.

102. Melasmia hypophylla (B. et Rav.) Sacc.

(*Leptostroma B. et Rav. sine diagnosi.*)
M. gleditschiæ E. & E.
On Gleditsia triacanthos L.
Athens, Athens Co., Ohio. Sept. 3, 1902.
Coll. W. A. Kellerman.

"Melasmia Gleditschiæ, E. & E. — On living leaves of Gleditschia triacanthos, Concordia, Mo., October, 1887. Rev. C. H. Demetrio. Perithecia hypophyllous, flattened, rugulose, ½-1 mm. in diameter, thickly scattered over the part of the leaf occupied, which turns dark brown; sporules oblong, hyaline, 3-5 x 1-1¼μ, continuous, borne on densely fasciculate basidia 10-12μ long. Found also in Louisiana by Rev. A. B. Langlois and at Manhattan, Kansas, by Kellerman & Swingle (No. 1206)." J. B. Ellis and B. M. Everhart, Journal of Mycology, 4:45-46. 1888.

103. Mollisia dehnii (Rabenh.) Karst.

On Potentilla monspeliensis L.
Steubenville, Jefferson Co., Ohio. July 3, 1902.
Coll. W. A. Kellerman.

"Peziza Dehnii Rabenhorst."
"P. gregaria, subsessiles, obovata, livido-fusca, subhyalina, tenax, extus glabriuscula (pube tenerrima adpressa), disco applanato margineque arrecto undulato concolore."
"Die lebenden jungen and alten Stämme und Zweige der Potentilla norvegica oft ganz dich überziehend. In der Jugend ist der Pilz geschlossen, verkehrt eiförmig, ⅛-⅙-¼ Linie im Durchmesser, später ausgebreitet mit flacher, bis ½ Linie breiter Scheibe and einem steif aufgerichteten Rande, am Grunde in einen kaum merklichen Steil zusammen gezogen, von fester Substanz durchscheinend gelbbrauner Farbe und glatter Oberfläche, nur bei starker Vergrösserung einen zarten angedrückthaarigen Ueberzug zeigend."....etc. L. Rabenhorst, Botanische Zeitung, 1:12. January 6, 1843.

104. Peridermium pini Wallr.

(Aecidium pini Pers.)

On Pinus rigida Mill.

Sugar Grove, Fairfield Co., Ohio. May 31, 1902.

Coll. W. A. Kellerman.

"Lycoperdon Pini gregarium oblongum compressum aurantiacum, apice dehiscens, pulvere concolore. Fig. nostr. 12.

"Oblongum obtusum sessile and parasiticum lateribus compressis, apice irregulariter dehiscens. Recens aurantiacum, siccum albido-flavescens est. Semen aurantiacum est; siccitate etiam flavescit.

"In ramis junioribus emortuis Pini sylvestis in der Jungfernheide prope Berolinum, sed rarius, vere observavi." Observationes Botanicæ. Auctore Carol. Ludov. Willdenow, in Magazin für die Botanik. Herausgegeben von Job. Jacob Römeri and Paulus Usteri. 1788. Viertes Stück. Utile dulci, Zurich, bey Johann Fuefsly. Page 16.

"Aecidium pini Pers.

"Ae. oblongo-compressum pallidum, seminibus aurantiis. Willden. bot. Mag. 4. t. 4f 12." Caroli a Linne, Systema Naturæ, 2ª: 1473. 1791. Ed. 13. Auct. Jo. Frid. Gmelin.

105. Polyporus resinosus (Schrad.) Fr.

(Boletus resinosus Schrad.)

On rotten wood.

Columbus, Ohio. Oct. 28, 1902.

Coll. W. A. Kellerman.

"B. *rubiginosus,* pileo convexo farinaceo rubiginoso, poris teretibus obtusis albidis.

"Hab. ad Fagi aliarumque aborum truncos emarcidos in silvat. Ducat. Brunsvicens.

"Pileus 2-quatuour uncias diametro excédens, semunciam et ultra crassus, farina rubiginosa, difficile, detergenda, conspersus.

"Pori lineares, minutissimi, teretes, obtusi, primum albidi, dein pallescentes.

"Substantia pallida; exsiccata dura, suberosa." Auctore Henrico Adolpho Schrader, Spicilegium Floræ Germanicæ. 1794.

"B. *resinosus,* pileo convexo rugoso resinoso castaneo, poris teretibus obtusis albidus.

"Hab ad Fagi silvestris truncos cæsos putridos in silvaticis Ducat. Brunsvic.

"Pileus diametro longitudinali 4-6 uncias excedens, convexus, crassus, rugosus, materia resinosa, saturate fusca, marginem versus paulo dilutiori, per ficcitatem corrugante, oblitus.

"Pori longiusculi, minuti, teretes, obtusi, primum albi, dein pallescentes.

"Substantia suberosa, tenacissima, fomiti apta, dilute pallida.

"Affinis B. *fomentario* et *igniario* Linn. ab utroque vero satis distinctus." Auctore Henrico Adolpho Schrader, Spicilegium Floræ Germanicæ, 171. 1794.

106. Puccinia fusca (Pers.) Winter.

On Anemone quinquefolia L.

Carey, Wyandot Co., Ohio. May 4, 1902.

Coll. Thos. Bonser.

"Aecidium fuscum.

"Ae. semnibus fuscis. *Persoon.*. Caroli a Linne, Systema Vegetabilium, 1473. Cura Jo. Frid. Gmelin." 1791.

R. Relhan as author has been credited by Winter, and his description is also given below, but Persoon not Relhan (sec. Holway, Jour. Mycol. 8:172. Dec. 1902), should be cited as original author.

"Plantula haec de qua variæ opiniones nuper habitæ sunt, dum quibusdam ex insectorum ictu, aliis vero e morbo oriri credebatur, in foliis Anemones nemorosae parasitat; praesertim paginem inferiorem, nonnunquam, sed rarius superiorum, vel ipsa petala utrinque occupans; initio pallide lutea, orbiculata, sparsa, numerosa in uno folio 600. Semina, epidermide sub qua latent demum fracta, nuda apparent, filis destituta, non cohaerentia, saturate fusca; quibus tandem excussis, theca, membranacea, suborbiculata, marginibus laceris, vacua persistit. Plantae contiguae saepe in vetustiore statu confluunt. Folia in quibus Aecidium parasitat, crassiora, rigidiora, filicum quodammodo aemula evadunt; pauca tamen specimina inveni ne minima quidem injuria visibili affecta." R. Relhan, Floræ Cantabrigiensi Supplementum Tertium, 36. 1793.

107. Puccinia helianthi Schw.

On Helianthus ambiguus (T. & G.) Britt. (H. giganteus ambiguus T. & G.)

Edgerton, Williams Co., Ohio. Sept. 15, 1902.

Coll. W. A. Kellerman.

Supplement to No. 10.

108. Puccinia muhlenbergiæ Arth. & Holw.

On Muhlenbergia mexicana (L.) Trin.

Buckeye Lake, Perry Co., Ohio. Oct. 23, 1902.

Coll. W. A. Kellerman and James McOwen, Jr.

"Puccinia muhlenbergiæ, *sp. nov.*

"*Puccinia windsoriae* Burrill non Schw., Bull. Ill. Lab. Nat. Hist. 2: 197.

"O. I. Spermogonia and aecidia unknown.

"II. III. Sori hypophyllous or sparingly amphigenous, prominent, oblong or linear-oblong, soon naked, ruptured epidermis inconspicuous. II. Uredosori light brown, pulverulent; uredospores globose or globose-elliptical, 22-30μ in diameter, wall thin, yellowish brown, closely and distinctly echinulate, pores about 5, scattered. III. Teleutosori chocolate-brown; teleutospores obovate or oblong obovate, dark brown, 19-27 by 30-40μ, not constricted at the septum, narrowed somewhat toward the base, side walls rather thin, apex rounded and somewhat thickened, pedicel hyaline, tinted, stout, firm, about the length of the spore." J. C. Arthur and E. W. D. Holway, Bulletin from the Laboratories of Natural History of the State University of Iowa, 5:317. Oct. 1902.

109. Puccinia muhlenbergiæ Arth. & Holw.

On Muhlenbergia diffusa Willd.
Buckeye Lake, Perry Co., Ohio. Oct. 23, 1902.
Coll. W. A. Kellerman.

Supplement to No. 109.

110. Puccinia myrrhis Schw.

Aecidiospores.
On Washingtonia claytoni (Mx.) Britt.
Cincinnati, Ohio. April 12, 1902.
Coll. Walter H. Aiken.

"Aecidium Osmorrhizae *n. sp.* Spots yellowish, frequently on the midveins; peridia hypogynous, clustered or seriated along the veins, slightly elevated, with the margin subentire, incurved; spores subglobose, yellow, becoming pale, 1-1000 in. in diameter; spermogonia central, on the same side." Charles H. Peck, Annual Report of the New York State Museum, 24:92. 1871.

111. Puccinia myrrhis Schw.

Uredospores only.
On Chærophyllum procumbens (L.) Crantz.
Columbus, Ohio. April 20, 1902.
Coll. W. A. Kellerman.

"Puccinia myrrhis, L. v. S.....
"P. emaculata. Acervis crebris minutis, epidermide rupta cinctis, pulvinatim applanatis. Sporidiis laxissimis luteofuscis." L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia, 4:296. 1834.

112. Puccinia myrrhis Schw.

Teleutospores only.
On Chærophyllum procumbens (L.) Crantz.
Columbus, Ohio. May 20, 1902.
Coll. W. A. Kellerman.

Supplement to No. 111.

113. Puccinia myrrhis Schw.

Teleutospores.
On Washingtonia claytoni (Mx.) Britt.
Fernwood, Jefferson Co., Ohio. July 4, 1902.
Coll. W. A. Kellerman.

Supplement to No. 111.

114. Puccinia myrrhis Schw.

Teleutospores.

On Washingtonia longistylis (Torr.) Britt.

Fernwood, Jefferson Co., Ohio. July 4, 1902.

Coll. W. A. Kellerman.

Supplement to No. 111.

115. Puccinia polygoni-amphibii Pers.

On Polygonum emersum (Mx.) Britton.

Buckeye Lake, Licking Co., Ohio. Oct. 29, 1902.

Coll. W. A. Kellerman and James McOwen, Jr.

Supplement to No. 92.

116. Pucciniastrum agrimoniæ (DC.) Diet.

On Agrimonia parviflora Soland.

Wauseon, Fulton Co., Ohio. Sept. 10, 1902.

Coll. W. A. Kellerman.

"Puccinia potentillae: subrotunda sessilis nigra, sporulis cylindricis obtusis.

"Pustulas in inferiore folii pagina sistit nigras sparsas. *Sporulae* eadem fere sunt forma, ac in sequente specie, sed mucrone destitutae sunt; septulis ut plurimum tribus distinctae sunt. D. C. H. Persoon, Synopsis Methodica Fungorum, 228. 1801.

"*Uredo potentillarum.*

"*s. Agrimoniae eupatoriae.*

"Je ne vois aucune différence digne d'être remarquée entre les urédos qui attaquent toutes les plantes que je viens de désigner, et je les regarde tous comme de simples variétés les uns des autres. Cette espèce est une des plus communes." A. P. DeCandolle, Flore Française, 6:81. 1815.

117. Septoria œnotheræ (Lasch) West.

On Onagra biennis (L.) Scop.

West Alexandria, Preble Co., Ohio. July 4, 1901.

Coll. W. A. Kellerman.

"D [epazea] Oenotheræ. Nachtkerzen—I.

"Perithecien rundlich, schwarz, eingesenkt, auf einem braunen Flecken. Lasch I. I. N. 369.

"Auf den Blättern der Oenothera biennis." Dr. L. Rabenhorst, Deutschlands Kryptogamen Flora, 1:138. 1844.

118. Septoria verbascicola B. & C.

On Verbascum blattaria L.

Columbus, Ohio. July 15, 1902.

Coll. W. A. Kellerman and F. J. Tyler.

"Septoria verbascicola, B. & C. [sine diagnosi].

"Spots round, dry, thin, 1-3 millim. in diameter, border broad, dark purple; perithecia black, but few in a spot, clustered, innate, slightly prominent, epiphyllous, but visible beneath, 80-85 μ in diameter; sporules hyaline, filiform, curved, 20-40 μ x 1½ μ" George Martin, Journal of Mycology, 3:78. July 1887.

119. Uromyces burrillii Lagerh.

(Uromyces junci Burrill)

On Scirpus fluviatilis (Torr.) A. Gray.

Buckeye Lake, Perry Co., Ohio. Oct. 23, 1902.

Coll. W. A. Kellerman.

"U. scirpi, Burrill.

"II., III. Amphigenous, spots brown, indeterminate; sori long covered by the epidermis, minute and rounded, or larger, oblong, sometimes confluent end to end, forming clusters up to one-fourth of an inch long, nearly black. Spores among the teleutospores few, irregularly elliptical, yellowish brown, sparsely echinulate, 15-20 by 27-36 μ. III. Spores clavate-elliptical, widest at centre, mostly pointed, brown, apex darker, and thickened, 18 by 32-42 μ; pedicel stout, subhyaline, about the length of the spore." T. J. Burrill, Parasitic Fungi of Illinois, Part I, p. 168, 1885, in Bulletin of the Illinois State Laboratory of Natural History, Vol. II.

120. Uromyces toxicodendri Berk. & Rav.

On Rhus radicans L.

Cedar Point, Erie Co., Ohio. Sept. 22, 1902.

Coll. W. A. Kellerman.

"Uromyces toxicodendri. *B. & R.* — Effusus rufus; sporis ovatis obtusis apiculatisve lineis brevibus notatis.

"On the stem, petioles and leaves of *Rhus toxicodendron.* Aiken. Ravenel. No. 1688.

"Effused, rufus; spores ovate, obtuse or apiculate, marked with short lines somewhat like the sporidia of *Ascobolus furfuraceus.*" M. J. Berkeley, Grevillea, 3:56. Dec. 1874.

"Pileolaria brevipes. *B. & Rav.* — Pedicellis brevibus; sporis depresso globosis.

"On leaves of *Rhus toxicodendron.* Cotoosa Springs, Georgia. Ravenel. No. 1722. Alabama, Beaumont. No. 4020.

"Forming little specks on the underside of the leaves; stem short, flexuous; spores at first globose, with three coats, then depressed with a central nucleus, .00114 in. diameter." M. J Berkeley, Grevillae, 3:58. Dec. 1874.

Corrected Label; cfr. Bot. Gaz. 35:19. *Jan.* 1903.

1. Puccinia impatientis (Schw.) Arth.

Æcidiospores.

Corrected Label; cfr. Bot. Gaz. 35:15. *Jan.* 1903.

3. Puccinia sambuci (Schw.) Arth.

Æcidiospores.

Through inadvertency an erroneous label, both as to name and description, accompanied specimen No. 18, *which therefore is to be discarded and the following substituted:—*

18. Stamnaria americana Mass. & Morg.

On Equisetum robustum R. Br.

Logan, Hocking Co., Ohio. Oct. 8, 1894.

Coll. W. A. Kellerman.

"Stamnaria americana Massee & Morgan n. sp.—

"Erumpent, gregarious or crowded in clusters of three or four, sessile or with a very short stem-like base, about ½ mm. across and high, thin, translucent, margin scarious, uneven, entirely pale amber when dry, concave; asci clavate, apex rounded, not blue with iodine, 8-spored, 170 x 15-16 mic.; spores irregularly 2-seriate, hyaline, smooth, continuous narrowly elliptic-fusiform, often slightly inaequilateral, 2-guttulate, 26-29 x 7-8 mic.; paraphyses slender, tips slightly clavate, often branched; excipulum and cortex formed of very slender septate hyphae running from base to margin.

"On dead stems of Equisetum hyemale, Preston, O. Entire fungus delicate, thin, soon collapsing. Readily distinguished from S. equiseti in the much larger asci and spores." A. P. Morgan, Journal of Mycology, 8:183. Dec. 1902.

Please cancel and discard label for No. 64 *and substitute therefor the following:—*

64. Cercospora kellermani Bubak.

On Althæa rosea Cav. (Cultivated.)

Columbus, Ohio. June 9, 1901.

Coll. W. A. Kellerman.

"Cercospora kellermani Bubák n. sp.—Flecken auf beiden Blattseiten, unregelmässig, eckig, von den Blattnerven begrenzt, olivenbraun undeutlich graulich umrandet, oft zusammenfliessend, bis 1 cm. im Durchmesser. Fruchtträger auf beiden Blattseiten, büschelweise, schlank, wenig verbogen, bis 150μ lang, 4-5μ breit, oft fast schon vom unteren ¼-½ entfernt gezähnt (bis 6 Zähne), mit 3-5 Querwänden, olivenbraun, manchmal an der Spitze heller. Conidien nadelförmig, 50-150μ lang, 4-5μ breit, mit 5-15 *Querwaenden*, gerade oder wenig gekrümmt, hyalin, gegen den Scheitel allmählig schweifförmig verschmälert," Francis Bubák, Journal of Mycology, 9:3. Feb. 1903.

Corrected Label; cfr. Bot. Gaz. 35:15. *Jan.* 1903.

88. Puccinia sambuci (Schw.) Arth.

Puccinia atkinsoniana Dietel.

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KEY to N. A. species of Limacium, *see Limacium, Key.* . . .

Discard "Key to N. A. species of Coprineae, see" etc., substitute:—

KEY to N. A. species of Coprineæ, *see Coprineae, Keys.* . . .

Discard "Key to N. A. species of Coprinus," etc., substitute:

KEY to N. A. species of Coprinus, *see Coprinus, Key.* . . .

KEY to the genera of Nidulariaceae. [V. S. White.] Bull Torr. Bot. Club, 29:254. May 1902.

KEY to the North American species of Lactarius—I. [F. S. Earle.] Torreya, 2:139-141. Oct. 1902.

KEY to the North American species of Lactarius—II. [F. S. Earle.] Torreya, 2:152-4. Oct. 1902.

KEY to the North American species of Periconia, [F. S. Earle.] Bull. N. Y. Bot. Garden, 2:(332). 25 April 1902.

KEY to N. A. species of Nyctalis, *see Nyctalis, Key.* . . .

KEY to genera of Plectascineae. Bot. Gaz. 34:41. July 1902.

KEY to Uredineæ on Phragmites, Spartina and Arundunaria. [J. C. Arthur.] Bot. Gaz. 34:1-20. July 1902.

KEY to N. A. species of Russula, *see Russula, A Key.* . . .

KRIGIA amplexicaulis, host to Puccinia krigiæ Syd. n. sp. Monogr. Uredin. 1:105. 30 June 1902.

KUPFER, Elsie M. Studies on Urnula and Geopyxis. Bull. Torr. Bot. Club, 29:137-144. 1 pl. March 1902.

LABORATORY Outlines for the Elementary Study of Plant Structures and Functions from the standpoint of evolution. VIII, Bacteria; IX, Slime Moulds. John H. Schaffner. Jour. Appl. Micr. and Lab. Meth. 5:1798-9. May 1902.

LABOULBENIA bledii Thaxter n. sp., on elytron and abdomen of Bledius jacobinus Lec. Proc. Am. Acad. Arts & Sci. 38:27. June 1902.

LABOULBENIA dentifera Thaxter n. sp., on the margin of the elytra of Notiobia disposita Bates. Proc. Am. Acad. Arts & Sci. 38:34. June 1902.

LABOULBENIA formicarum Thaxter n. sp., on all parts of Lasius americanus M. and of Formica neogagates M. Proc. Am. Acad. Arts & Sci. 38:39. June 1902.

LABOULBENIA media Thaxter n. sp., on Galerita sp. (tips of elytra); on tip of abdomen, inferior, of Galerita lecontei Dej. Proc. Am. Acad. Arts & Sci. 38:45. June 1902.

LABOULBENIA pallida Thaxter n. sp., on elytron of Clivina fasciata Putz.; on C. dilutipennis Putz. Proc. Am. Acad. Arts & Sci. 38:49. June 1902.

LABOULBENIA tachys Thaxter n. sp., on Tachys incurvus Say. Proc. Am. Acad. Arts & Sci. 38:38. June 1902.

LABOULBENIA texana pendula Thaxter nov. var., on Brachinus lateralis Dej. Proc. Am. Acad. Arts & Sci. 38:55. June 1902.

LABOULBENIA texana var. rostellata Thaxter (Laboulbenia rostellata Thaxter). Proc. Am. Acad. Arts & Sci. 38:55. June 1902.

LABOULBENIA texana var. tibialis Thaxter (Laboulbenia tibialis Thaxter). Proc. Am. Acad. Arts & Sci. 38:55. June 1902.

LABOULBENIA, Preliminary Diagnoses of New Species of, V. Roland Thaxter. Proc. Am. Acad. Arts & Sci. 38:9-57. June 1902.

LACHNOCLADIUM atkinsonii Bresadola n. sp. Jour. Mycol. 8:119. Oct. 1902.

LACHNUM engelmanni Tracy and Earle, syn. of Peziza (Dasycyphæ) arida Phill. [C. L. Shear.] Bull. Torr. Bot. Club, 29:449. July 1902.

LACHNUM viridulum Massee & Morgan n. sp., on dead wood of Quercus alba. Jour. Mycol. 8:186. Dec. 1902.

LACTARIUS brevipes Longyear n. sp., growing on moss-covered ground in Oak woods. Rep. Mich. Acad. Sci. 1901, 3:59. 1902.

LACTARIUS foetidus Peck n. sp., low damp ground in woods. N. Y. State Mus. Bull. 54:949. Nov. 1902.

LACTARIUS, Key to N. A. Species, *see Key to the. . . .*

LACTARIUS subserifluus Longyear n. sp., growing on naked or mossy soil in upland woods. Rep. Mich. Acad. Sci. 3:57. 1901.

LÆSTADIA ari E. & E. n. sp., on living leaves of Arum arifolium. Jour. Mycol. 8:67. June 1902.

LÆSTADIA prenanthis E. & E. n. sp., on living leaves of Prenanthes crepidinea. Jour. Mycol. 8:66. June 1902.

LASIODIPLODIA tubericola E. & E., indigenous in this country, on beets, tomatoes, egg-plant, corn-husks, crookneck-squash. Jour. Mycol. 8:110. Oct. 1902.

LASIUS americanus M., host to Laboulbenia formicarum Thaxter n. sp. Proc. Am. Acad. Arts & Sci. 38:39. June 1902.

LEAF Mould, matrix for Agaricus cretacellus Atkinson n. sp. Jour. Mycol. 8:110. Oct. 1902. ,

LEAVES and Moss, matrix for Cyathia hirsuta infundibuliformis White n. var. Bull. Torr. Bot. Club, 29:261. May 1902.

LEAVES, old, in woods, host to Sporocystis condita Morgan n. sp. Jour. Mycol. 8:169. Dec. 1902.

LECIDEA granulosa phyllizans A. Zahlbr. n. var., ad terram inter muscos et cladonias. Beihefte z. Bot. Centralbl. 13:159. 1902.

LECANORA obpallens Nyl., *syn. of Acarospora obpallens q. v.*

LECANIA toninioides A. Zahlbr. n. sp., ad terram nudam. Beihefte z. Bot. Centralbl. 13:160. 1902.

LECANIA turicensis californica A. Zahlbr. n. var., ad saxa calcarea. Beihefte z. Bot. Centralbl. 13:159. 1902.

LENTINUS americanus Peck n. sp., rarely on rotten logs, commonly on the ground in moist shady thickets. Bull. Torr. Bot. Club, 29:72. Feb. 1902.

LENZITES betulina radiata Peck n. var., dead trunks of Beech. N. Y. State Mus. Bull. 54:965. Nov. 1902.

LEPACHYS columnaris, host to Physalospora lepachydis E. & E. n. sp. Jour. Mycol. 8:16. May 1902.

LEPIOTA adnatifolia Peck n. sp., ground under pine trees. N. Y. State Mus. Bull. 54:947. Nov. 1902.

LEPIOTA caloceps Atkinson n. sp., woods. Jour. Mycol. 8:115. Oct. 1902.

LEPIOTA cyanozonata Longyear n. sp., growing on decaying sticks on ground in woods. Rep. Mich. Acad. Sci. 1901, 3:55-7. 1902.

LEPIOTA ecitodora Atkinson n. sp., ground. Jour. Mycol 8:115. Oct. 1902.

LEPIOTA purpureoconia Atkinson n. sp., ground, woods. Jour. Mycol. 8:116. Oct. 1902.

LEPTONIA rosea Longyear n. sp., burnt soil on a sandy hillside. Rep. Mich. Acad. Sci. 1901, 3:59. 1902.

LEPTONIA seticeps Atkinson n. sp., on rotten logs or very rotten wood. Jour. Mycol. 8: 116. Oct. 1902.

LEPTOTÆNIA multifida, host to Aecidium leptotæniæ Lindroth n. sp. Meddel. fr. Stockholms Högskolas botaniska Institut. Bd. IV. 1901.

LEPTOSPHÆRIA astericola E. & E. n. sp., on dead stems of Aster multiflora. Jour. Mycol. 8:17. May 1902.

LIATRIS spicata, host to Septoria liatridis Ell. & Davis n. sp. Jour. Mycol. 8:13. May 1902.

LICHENS — Alectoria, Evernia and Ramalina, Illustrated. Carolyn W. Harris. Bryologist, 4:36-9. 1 pl. April 1901.

LICHENS — Citraria, Illustrated. Mrs. Carolyn W. Harris. Bryologist, 4:41-5. 1 pl. July 1901.

LICHENS, Ecological Distribution, an incentive, *see Ecologic Distribution*. . . .

LICHENS of Northwestern Minnesota, VI. Contributions to a Knowledge of the Lichens of Minnesota. [Distribution and habitat.] Bruce Fink. Minn. Bot. Studies, 2:657-709. 15 May 1902.

LICHENS, Notes on New Species of, collected by the Harriman Expedition. [Abstr. paper before the Soc. Pl. Morph. and Phys.] Clara E. Cummings. Science, N. S. 15:408. 14 March 1902.

LICHENS [and Hepaticæ. Annotated List.] John Macoun. Catalogue of Canadian Plants. Part VII:49-180. 1902.

LICHENS. [List, 6 species, in Flora of New Providence and Audros: Bahama Islands.] Alice R. Northrop. Mem. Torr. Bot. Club, 12:15. 10 Dec. 1902.

LICHENS — Parmelia, Illustrated. Carolyn W. Harris. Bryologist, 4:57-61. 1 pl. Oct. 1901.

LICHENS — Physcia. [Eleven species, illustrated.] Carolyn W. Harris. Bryologist, 5:21-4. 1 pl. March 1902.

LICHENS — Theloschistes — Pyxine, Illustrated. Carolyn W. Harris. Bryologist, 5:59-62. July 1902.

LICHENS — Umbilicaria, Illustrated. Carolyn W. Harris. Bryologist, 5:89-92. 1 pl. Nov. 1902.

LICHENS on Rocks [Porphyry.] Samuel T. Hensel. Science, N. S. 16:593-4. 10 Oct. 1902.

LIMACIUM, Key to Species, *see Hygrophoreae, Key*. . . .

LLOYD, C. G. The Geastræ. Illustrated with 80 figures. [General characters, also descriptions, illustrations and distribution of species, and references.] Cincinnati, Ohio, U. S. A. June 1902. 44 pp.

LLOYD, C. G. Mycological Notes, [169-181] No. 9:81-96. April 1902.

LLOYD, C. G. Mycological Notes, [182-190] No. 10:97-104. Sept. 1902.

LLOYD, C. G. Mycological Notes. [191-199.] No. 11:105-112. Dec. 1902.

LLOYD, C. G. Mycological Notes. [200-213.] No. 12:113-120. pl. 1-5. Dec. 1902.

LOCELLINA starnesii Peck n. sp. Bull. Torr. Bot. Club, 29:72. Feb. 1902.

LOCH Leven, Salmo trutta levenensis, host to Bacterium truttæ Marsh n. sp. Science, N. S. 16:706. 31 Oct. 1902.

LOG, rotting, host to Pleurotus stratosus Atkinson n. sp. Jour. Mycol. 8:116. Oct. 1902.

LOGS, decaying, in woods, host to Annularia mammillata Longyear n. sp. Rep. Mich. Acad. Sci. 3:59. 1901.

LONG, W. H., Jr. Texas Fungi.—I. Some New Species of Puccinia. Bull. Torr. Bot. Club, 29:110-116. Feb. 1902.

LONGENECKER, A. M. Mushrooms. [A popular account.] Plant World, 5:213-218. *pl. XXV—XXVI.* Nov. 1902.

LONGYEAR, B. O. Notes on Michigan Saprophytic Fungi. Rep. Mich. Acad. Sci. 1901, 3:55-7. 1902.

LONGYEAR, B. O. A Sclerotium Disease of the Huckelberry. (Sclerotinia vaccinii Wor.) Rep. Mich. Acad. Sci. 1901, 3:61-2. 1902.

LUFFA acutangula, dried pericarp, host to Macrophoma subconica E. & E. Jour. Mycol. 8:63. June 1902.

LYCIUM californicum, bark, matrix for Arthonia lecanactidea A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:155. 1902.

LYCOPERSICUM esculentum, dead stems, host to Cercospora canescens E. & M. Jour. Mycol. 8:73. June 1902.

MACLURA aurantiaca, host to Cercospora macluræ E. & E. n. sp. Jour. Mycol. 8:72. June 1902.

MACOUN, John. Lichens [and Hepaticæ. Annotated List.] Catalogue of Canadian plants, Part VII:49-180. 1902.

MACROSPORIUM ornatissimum E. & B. n. sp., on living leaves of Sorghum vulgare. Jour. Mycol. 8:178. Dec. 1902.

MAGNOLIA glauca, host to Haplosporella grandinea E. & E. n. sp. Jour. Mycol. 8:63. June 1902.

MAGNOLIA grandiflora, host to Sphæropsis grandiflora E. & E. n. sp. Jour. Mycol. 8:63. June 1902.

MAGNOLIA obovata, host to Pleomassaria magnoliæ Shear n. sp. Bull. Torr. Bot. Club, 29:455. July 1902.

MARASMIUS tomentosipes Peck n. sp., on vegetable mould in damp, mossy places in coniferous woods. Bull. Torr. Bot. Club, 29:71. Feb. 1902.

MARSH, M. C. Bacterium truttæ, a new Species of Bacterium pathogenic to Trout. Science, N. S. 16:706-7. 31 Oct. 1902.

MELANCONIELLA, *see Melanconis.* . . .

MELANCONIS (Melanconiella) nyssægena E. & E. n. sp., on dead limbs of Nyssa multiflora. Jour. Mycol. 8:18. May 1902.

MERISMA candida Schw., *see Tremellidendron candidum.* . . .

METASPHÆRIA carveri E. & E. n. sp., on dead stems of Sesamum orientale, Glycine hispida, Cassia tora and Mucuna utilis. Jour. Mycol. 8:68. June 1902.

METASPHÆRIA ipomeæ E. & E. n. sp., on dead stems of Ipomoea. Jour. Mycol. 8:68. June 1902.

METASPHÆRIA sanguinea E. & E. n. sp., on dead stems of Helenium tenuifolium. Jour. Mycol. 8:68. June 1902.

METASPHÆRIA subseriata E. & E. n. sp., on dead culms of Panicum virgatum. Jour. Mycol. 8:17. May 1902.

METASPHÆRIA washingtoniæ Earle n. sp., on dead petioles of Washingtonia. Bull. N. Y. Bot. Garden, 2:(347). 25 April 1902.

MELIA azedarach, dead limbs, host to Botryodiplodia meliæ E. & E. n. n. Jour. Mycol. 8:64. June 1902.

MELIA azedarach, host to Macrophoma subconica E. & E. Jour. Mycol. 8:63. June 1902.

MELILOTUS alba, host to Pleospora kansensis E. & E. n. sp. Jour. Mycol. 8:17. May 1902.

MICROGLÆNA hassei A. Zahlbr. n. sp., ad corticem Juglandis californiæ. Beihefte z. Bot. Centralbl. 13:152. 1902.

MICROGLÆNA sychnogonoides A. Zahlbr. n. sp., ad corticem Quercus agrifoliæ. Beihefte z. Bot. Centralbl. 13:151. 1902.

MILDEW of the Grape. [Appeared first of September, 1901.] Byron D. Halsted. An. Rep. N. J. Exp. Sta. 1901, 22:438. 1902.

MILK, freshly drawn, host to Bacterium halofaciens Harrison & Cummings n. sp. Jour. Appl. Micr. & Lab. Meth. 5: 2033. Nov. 1902.

MOEHRE, *see Daucus carota*. . . .

MOLDS, the Prevention of, on Cigars. Rodney H. True. Science, N. S. 16:115-6. 18 July 1902.

MOLD, vegetable, damp coniferous woods, matrix for Marasmius tomentosipes Peck n. sp. Bull. Torr. Bot. Club, 29:71. Feb. 1902.

MOLLISIA alabamaensis E. & E. n. sp., on decaying canes of Rubus villosus. Jour. Mycol. 8:69. June 1902.

MONILIA martini E. & E. var. incendiarum, culture of [Harshberger.] Jour. Mycol. 8:156. Oct. 1902.

MONOGRAPH of the Acrasieæ. Edgar W. Olive. Proc. Boston Soc. Nat. Hist. 30:451-513. pl. 5-8. Aug. 1902.

MONOICOMYCES nigrescens Thaxter n. sp., on the tip of the abdomen of Calodera sp., and of Tachyusa sp. Proc. Am. Acad. Arts & Sci. 38:10. June 1902.

MONOICOMYCES oxypodæ Thaxter n. sp., on the inferior tip of the abdomen of Oxypoda sp. Proc. Am. Acad. Arts & Sci. 38:10. 1902.

MORCHELLÆ — The Morels. A. P. Morgan. Jour. Mycol. 8:49-50. June 1902.

MORELS, The — Morchellæ. A. P. Morgan. Jour. Mycol. 8:49-50. June 1902.

MORGAN, A. P. The Discomycetes of the Miami Valley, Ohio. Jour. Mycol. 8:179-192. Dec. 1902.

MORGAN, A. P. A New Genus of Fungi. [Sporocystis; Hyalodictæ in Tuberculariecæ.] Jour. Mycol. 8:169. Dec. 1902.

MORGAN, A. P. Notes on Some Florida Myriostomas and Geasters. Jour. Mycol. 8:3-4. May 1902.

MORGAN, A. P. A New Genus of Fungi. [Acontium; related to Cephalosporium.] Jour. Mycol. 8:4-5. May 1902.

MORGAN, A. P. Morchellæ — The Morels. Jour. Mycol. 8:49-50. June 1902.

MORUS, host to Periconia commonsii Earle n. sp. Bull. N. Y. Bot. Garden, 2:(333). 25 April 1902.

MOSSES, host to Eocronartium typhuloides Atkinson n. sp. Jour. Mycol. 8:107. Oct. 1902.

MOSSES, peat, among, matrix for Hygrophorus paludosus Peck n. sp. Bull. Torr. Bot. Club, 29:70. Feb. 1902.

MOULDS injurious to Foods. [List.] Mary Dresbach. Ohio Naturalist, 2:228-9. June 1902.

MOULD, Tulip, *see Tulip Mould.* . . .

MT. DESERT FUNGI, *see Fungi, some, Mt. Desert.* . . .

MUCRONELLA minutissima conferta Peck n. var., decaying wood of birch, Betula lutea. N. Y. State Mus. Bull. 54:966. Nov. 1902.

MUCUNA utilis, host to Macrpohoma subconica E. & E. Jour. Mycol. 8:63. June 1902.

MUCUNA utilis, host to Metasphæria carveri E. & E. n. sp. Jour. Mycol. 8:68. June 1902.

MUCUNA utilis, host to Didymella ricini E. & E. Jour. Mycol. 8:67. June 1902.

MUHLENBERGIA diffusa Willd., host to Puccinia muhlenbergiæ Arth. & Hol. n. sp. Bull. Lab. Nat. Hist. State Univ. Iowa, 5:317. Oct 1902.

MUHLENBERGIA glomerata Trin., *see Muhlenbergia racemosa.*

MUHLENBERGIA mexicana (L.) Trin., host to Puccinia muhlenbergiæ Arth. & Hol. n. sp. Bull. Lab. Nat. Hist. State Univ. Iowa, 5:317. Oct. 1902.

MUHLENBERGIA pringlei, host to Ustilago muhlenbergiæ P. Henn. n. sp. Beiblatt zur Hedwegia, 41:(61). März-April 1902.

MUHLENBERGIA texana, host to Ustilago muhlenbergiæ Clint. n. sp. Jour. Mycol. 8:133. Oct. 1902.

MUHLENBERGIA racemosa (Mx.) B. S. P. (M. glomerata Trin.), host to Puccinia muhlenbergiæ Arth. & Hol. n. sp. Bull. Lab. Nat. Hist. State Univ. Iowa, 5:317. Oct. 1902.

MUNROA squarrosa, host to Septoria munroæ E. & B. n. sp. Jour. Mycol. 8:176. Dec. 1902.

MURRILL, W. A. Animal Mycophagists. Torreya, 2:25-6. Feb. 1902.

MURRILL, William Alphonso. The Polyporaceæ of North America.—I. The Genus Ganoderma. [Monograph.] Bull. Torr. Bot. Club, 29:599-608. Oct 1902.

MUSHROOMS. [A popular account.] A. M. Longenecker. Plant World, 5:213-218. *pl. XXV—XXVI.* Nov. 1902.

MUSHROOMS, Cave Grown. [Illustrated; N. Y. Gypsum mine.] Gardening, 10:198. 15 March 1902.

MUSHROOMS, Certain Eaters of. Hollis Webster. Rhodora, 4: 77-9. April 1902.

MUSHROOM Culture. W. N. Craig. Gardening, 10:364-5. 15 Aug 1902.

MUSHROOM Culture in France. Gardening, 10:330. 15 July 1902.

MUSHROOMS, The Field, Study of. F. S. Earle. Torreya, 2:2-4. Jan. 1902.

MUSHROOM, A New, for the Market. [Lepiota naucina.] H Webster. Rhodora, 4:199. Oct. 1902.

MUTCHLER, Fred. A Collection of Myxomycetes. [Bloomington, Ind.: 38 species.] Proc. Ind. Acad. Sci. 1901: 291-2. 1902.

MYCENASTRUM. [Description of genus, of one species and one form; one plate.] Lloyd's Mycological Notes [210-212], No. 12:119-120. *pl.* 5. Dec. 1902.

MYCENASTRUM corium form sterlingii Lloyd n. f. Mycological Notes [212], No. 12:120. *pl.* 5. *figs.* 10-11. Dec. 1902.

MYCOLOGICAL Clubs, Conservation of Energy in. Lucien M. Underwood. Torreya, 2:1-2. Jan. 1902.

MYCOLOGICAL Literature, Notes from, *see Notes from.* . . .

MYCOLOGICAL Notes and New Species. C. L. Shear. Bull. Torr. Bot. Club, 29:449-457. July 1902.

MYCOLOGICAL Notes, [169-181] No. 9:81-96]. C. G. Lloyd, Cincinnati, Ohio. April 1902.

MYCOLOLOGICAL Notes, [182-190] No. 10:97-104]. C. G. Lloyd, Sept. 1902.

MYCOLOGICAL Notes [191-199], No. 11 :105-112. C. G. Lloyd. Dec. 1902.

MYCOLOGICAL Notes [200-213], No. 12:113-120. *pl.* 1-5. Dec. 1902. C. G. Lloyd.

MYCOLOGY, Continuation of the Journal of. W. A. Kellerman. Jour. Mycol. 8:1-3. May 1902.

MYCOLOGY, Index to North American. [Alphabetical List of Articles, Authors, Subjects, New Species and hosts.] W. A. Kellerman. Jour. Mycol. 8:22-48, 74-103. May and June 1902.

NORTON, J. B. S. Sclerotinia fructigena. Trans. Acad. Sci. St. Louis, 12:91-7. 4 pl. 25 Aug. 1902.

NORTON, J. B. S. Sclerotinia fructigena. Science, N. S. 16:34. 4 July 1902.

NORTON, J. B. S. Sclerotinia fructigena. [Abstract.] Science, N. S. 16:137. 25 July 1902.

NOTES on the Amanitas of the Southern Appalachians. Part I. Sub-genus Amanitopsis. 3 pl. 8 pp. H. C. Beardslee. Published by the Lloyd Library. September 1902.

NOTES on Apple Rusts. [Prevalence, abundance, experiment (twig enclosed), germination of teleutospores, galls perennial, immunity.] H. H. Whetzel. Proc. Ind. Acad. Sci. 1901:255-261. 1902.

NOTES on the comparative Resistance to High Temperatures of the Spores and Mycelium of certain Fungi. Abigail A. O'Brien. Bull. Torr. Bot. Club, 29:170-2. Mar. 1902.

NOTES on Fungi. John W. Harshberger. Jour. Mycol. 8:156-161. Oct. 1902.

NOTES on Michigan Saprophytic Fungi. B. O. Longyear. Rep. Mich. Acad. Sci. 1901, 3:55-7. 1902.

NOTES from Mycological Literature. II. W. A. Kellerman. Jour. Mycol. 8:161-7. Oct. 1902.

NOTES from Mycological Literature. III. W. A. Kellerman. Jour. Mycol. 8:193-203. Dec. 1902.

NOTES on North American Fungi. A. P. Morgan. Jour. Mycol. 8:105-6. Oct. 1902.

NOTES on the North American Mycological Literature for 1901. W. A. Kellerman. Jour. Mycol. 8:20-2. Oct. 1902.

NOTES on Some West American Fungi. P. L. Ricker. [On 29 species, 1 new.] Jour. Mycol. 8:125-8. Oct. 1902.

NOTES on the Genus Stemonitis. H. H. Whetzel. Proc. Ind. Acad. Sci. 1901:261-6. 1902.

NOTES on Uredineæ. I. [Pucc. columbiensis, Pucc. fusca, Pucc. suffusca Holway n. n., Relhan's letter.] E. W. D. Holway. Jour. Mycol. 8:171-2. Dec. 1902.

NOTIOBIA disposita Bates, host to Laboulbenia dentifera Thaxter n. sp. Proc. Am. Acad. Arts & Sci. 38:34. June 1902.

NUCLEI, distribution of, in the feeding plasmodium of Fuligo septica Gmel. [Harshberger]. Jour. Mycol. 8:158. Oct. 1902.

NUMMULARIA discreta Tul., *see Canker of Apples.* . . .

NYCTALIS, Key to species, *see Hygrophoreae, Key.* . . .

NYSSA multiflora, host to Melanconis (Melanconiella) nyssaegena E. & E. n. sp. Jour. Mycol. 8:18. May 1902.

O'BRIEN, Abigail A. Notes on the comparative Resistance to High Temperatures of the Spores and Mycelium of Certain Fungi. Bull. Torr. Bot. Club, 29:170-2. Mar. 1902.

ODONTIA Fr., *syn of Etheirodon q. v.*

O'GARA, P. J. Notes on Canker and Black-Rot. [Sphæropsis rhoina (Schw.) Starb., and S. malorum.] Science, N. S. 16:434-5. 12 Sept. 1902.

OHIO Fungi, Fascicle II. [Reprint of original descriptions.] W. A. Kellerman. Ohio Naturalist, 2:205-213. Feb. 1902.

OHIO Fungi, Fascicle III. W. A. Kellerman. [The original descriptions of 18 species.] Jour. Mycol. 8:5-11. May 1902.

OHIO Fungi, Fascicle IV. [The original descriptions of 20 species.] W. A. Kellerman. Jour. Mycol. 8:56-62. June 1902.

OHIO Fungi, Fascicle V. [Labels and the original descriptions of 20 species.] W. A. Kellerman. Jour. Mycol. 8:119-125. Oct. 1902.

OHIO Stations for Myriostoma. John H. Schaffner. Jour. Mycol. 8:173. Dec. 1902.

OHLERIELLA Earle gen. nov. [Amphisphæriaceæ.] Bull. N. Y. Bot. Garden, 2:(349). 25 Apr. 1902.

OHLERIELLA neo-mexicana Earle n. sp., on old whitened woody stems. Bull. N. Y. Bot. Garden, 2:(349). 25 Apr. 1902.

OLIVE Diseases, *see Diseases, Olive.* . . . .

OLIVE, Edgar W. Monograph of the Acrasieæ. Proc. Boston Soc. Nat. Hist. 30:451-513. pl. 5-8. Aug. 1902.

OMPHALIA campanella sparsa Peck n. var., among fallen leaves and under pine trees. N. Y. State Mus. Bull. 54:964. Nov. 1902.

ONAGRA biennis (L.) Scop., host to æcidial stage of Puccinia peckii (De Toni) Kellerm. n. n. Jour. Mycol. 8:20. May 1902.

OPEOGRAPHA (Sect. Pleurothecium) umbellulariæ A. Zahlbr. n. sp., ad corticem Umbellulariæ californicæ. Beihefte z. Bot. Centrabl. 13:154. 1902.

OPUNTIA ficus-indica, host to Hendersonia opuntiæ E. & E. n. sp. Jour. Mycol. 8:65. June 1902.

OPUNTIA ficus-indica, host to Nectriella cacti E. & E. n. sp. Jour. Mycol. 8:66. June 1902.

ORANGE stems, host to Corticum dendriticum P. Henn. n. sp. Beiblatt zur Hedwigia, 41:(102). Mai-Juni 1902.

ORTON. W. A. The Wilt Disease of the Cow Pea and its Control. [Neocosmospora vasinfecta var. tracheiphila Erw. Sm.] U. S. Dept. Agr. Bureau Pl. Industry, Bull. 17:1-22. pl. 1-4. 22 Apr. 1902.

ORYZOPSIS micrantha (T. & R.) Thurb., host to Puccinia micrantha Griffiths n. sp. Bull. Torr. Bot. Club, 29:299. May 1902.

OXYDENDRUM arboreum, host to Cercospora oxydendri E. & E. n. sp. Jour. Mycol. 8:71. June 1902.

OXYDENDRUM arboreum, host to Godronia rugosa E. & E. n. sp. Jour. Mycol. 8:70. June 1902.

OXYPODA sp., host to Monoicomyces oxypodæ Thaxter n. sp. Proc. Am. Acad. Arts & Sci. 38:10. June 1902.

PADDOCK, Wendell. Plant Diseases of 1901. Colo. Agr. Exp. Sta. Bull. 69:1-20. 9 pl. March 1902.

PALMETTO logs, soft, host to Ganoderma sulcatum Murrill n. sp. Bull. Torr. Bot. Club, 29:607. Oct. 1902.

PANICUM amarum Ell., host to Uredo panici Arthur n. sp. Bull. Torr. Bot. Club, 29:231. April 1902.

PANICUM sulcatum Aubl., host to Phyllachora graminis panici-sulcati P. Henn. n. var. Beiblatt zur Hedwigia 41:(103). Mai-Juni 1902.

PANICUM virgatum, host to Metasphæria subseriata E. & E. n. sp. Jour. Mycol. 8:17. May 1902.

PARASITISM of Botrytis cinerea. Ralph E. Smith. Bot. Gaz. 33:421-436. June 1902.

PARASITISM of Cephalothecium roseum. H. J. Eustace. Science, N. S. 16:747-8. 7 Nov. 1902.

PARMELIA, *see Lichens Parmelia, Illustrated.* . . .

PASPALUM notatum, host to Sphacelotheca paspali-notati (Henn.) Clint. n. sp. (Ustilago paspali-notati Henn. Herb. Holway). Jour. Mycol. 8:140. Oct. 1902.

PASSALORA fasciculata (C. & E.) Earle n. n. [Fusicladium fasciculatum C. & E., etc.] Torreya, 2:159-160. October 1902.

PASSALORA helleri (Earle) Earle n. n. [Cercosporidium helleri Earle.] Torreya, 2:159-160. October 1902.

PATELLARIA hamamelidis Peck, *syn. of Dermatella hamamelidis q. v.* . . .

PATELLARIA tetraspora Massee & Morgan n. sp., on dead wood of Juglans cinerea. Jour. Mycol. 8:180. Dec. 1902.

PATHOLOGIST, Report of the State. J. B. S. Norton. Rep. 4th. An. Session Md. State Hort. Soc. 1901:27-32.

PATHOLOGY, Plant: A Retrospect and Prospect. Erwin F. Smith. Science, N. S. 15:601-612. 18 April 1902.

PATHOLOGY, Vegetable, On the Teaching of. Hermann von Schrenk. Bull. Torr. Bot. Club, 29:57-65. Feb. 1902.

PATHOLOGY, Vegetable, The Future of. Augustine D. Selby. Science, N. S. 15:736-740. 9 May 1902. An. Rep. Ohio Acad. Sci. 1901, 10:24-32. 1902.

PATTERSON, Flora W. A Collection of Economic and other Fungi prepared for distribution. U. S. Dept. Agr. Bureau of Plant Industry, Bulletin 8:1-31. 3 Feb. 1902.

PEACH Rot. J. B. S. Norton. Md. Agr. Exp. Sta. Cir. Bull. 39:1-3. March 1902.

PEAR Blight in California [especially the Winter Blight.] Newton B. Pierce. Science, N. S. 16:193-4. 1 Aug. 1902.

PECK, Charles H. New Species of Fungi. Bull. Torr. Bot. Club, 29:69-74. Feb. 1902.

PECK, Charles H. Report of the State Botanist 1901. N. Y. State Mus. Bull. 54:931-984. *pl. K—L*, 77-81. Nov. 1902.

PELARGONIUM zonale, host to Macrophoma subconica E. & E. Jour. Mycol. 8:63. June 1902.

PENICILLIUM digitatum, *see Rot, Orange and Lemon.* . . .

PENTSTEMON, dead stems, host to Gloniella pentstemonis Earle n. sp. Bull. N. Y. Bot. Garden, 2:(346). 25 April 1902.

PENTSTEMON gracilis, host to Septoria pentstemonicola E. & E. n. sp. Jour. Mycol. 8:13. May 1902.

PERICONIA, A Synopsis of the North American Species. Bull. N. Y. Bot. Garden, 2:(331)-(337). 25 April 1902.

PERICONIA commonsii Earle n. sp., on decorticated area on dead limb of Morus. Bull. N. Y. Bot. Garden, 2:(333). 25 Apr. 1902.

PERICONIA langloisii Earle n. sp., on dead stems of Andropogon. Bull. N. Y. Bot. Garden, 2:(335). 25 Apr. 1902.

PERICONIA palmeri Earle n. sp., on dead hanging twigs of Juniperus virginiana. Bull. N. Y. Bot. Garden, 2:(335). 25 April 1902.

PERIPLANETA americana Sauss., host to Herpomyces periplanetæ Thaxter n. sp. Proc. Am. Acad. Arts & Sci. 38:14. June 1902.

PERIPLANETA australasiæ Sauss., host to Herpomyces periplanetæ Thaxter n. sp. Proc. Am. Acad. Arts & Sci. 38:14. June 1902.

PERIPLANETA spp., host to Herpomyces periplanetæ Thaxter n. sp. Proc. Am. Acad. Arts & Sci. 38:14. June 1902.

PESTALOZZIA batatæ E. & E. n. sp., on tubers of Batatas edulis. Jour. Mycol. 8:65. June 1902.

PESTALOZZIA guepini viccinii Shear subsp. nov., on dead leaves of Vaccinium macrocarpon kept in a moist chamber. Bull. Torr. Bot. Club, 29:456. July 1902.

PESTALOZZIA mali E. & E. n. sp., on apple tree leaves. Jour. Mycol. 8:13. May 1902.

PETUNIA parviflora, dead stems, host to Cercospora canescens E. & M. Jour. Mycol. 8:73. June 1902.

PEZIZA badia Pers., Spore discharge [Harshberger]. Jour. Mycol. 8:158. Oct. 1902.

PEZIZA morgani Massee n. sp., on the ground in woods. Jour. Mycol. 8:190. Dec. 1902.

PEZIZA nana Massee & Morgan n. sp., on the ground. Jour. Mycol. 8:190. Dec. 1902.

PHOLIOTA ventricosa Earle n. sp. Bull. N. Y. Bot. Garden, 2: (341). 25 April 1902.

PHOMA apocrypta E. & E. n sp., on dead stems of Phytolacca decandra. Jour. Mycol. 8:62. June 1902.

PHOMA zeicola E. & E. [Perithecia at first on definite spots.] Jour. Mycol. 8:62. June 1902.

PHOMATOSPORA wistariæ E. & E. n. sp., on partly dead leaves of Wistaria frutescens. Jour. Mycol. 8:68. June 1902.

PHRAGMIDIUM andersoni Shear n. sp., on Potentilla fruticosa. Bull. Torr. Bot. Club, 29:453. July 1902.

PHRAGMITES phragmites (L.) Karst. (P. communis Trin.), host to Puccinia simillima Arthur n. sp. Bot. Gaz. 34:18. July 1902.

PHYCOMYCETE Fertilization, Studies in; Sclerospora graminicola (Sacc.). [Abstract.] F. L. Stevens. Science, N. S. 16: 140. 25 July 1902.

PHYCOMYCETES, Studies in the Fertilization of. [Sclerospora.] Frank Lincoln Stevens. Bot. Gaz. 34:420-5. *pl.* 17. Dec. 1902.

PHYLLACHORA copeyensis P. Henn. n. sp., in foliis vivis Swartziæ spec.? Beiblatt zur Hedwigia, 41:(103). Mai-Juni 1902.

PHYLLACHORA graminis (Pers.) Fuck. var, Panici sulcati P. Henn. n. var., in foliis vivis Panici sulcati Aubl. Beiblatt zur Hedwigia, 41:(103). Mai-Juni 1902.

PHYLLACHORA serialis E. & E. n. sp., on Spartina stricta. Jour. Mycol. 8:18. May 1902.

PHYLLACHORA tonduzii P. Henn. n. sp., in foliis vivis Myrsines spec. Beiblatt zur Hedwigia, 41:(103). Mai-Juni 1902.

PHYLLOCACTUS latifrons, host to Colletotrichum phyllocacti E. & E. n. sp. Jour. Mycol. 8:65. June 1902.

PHYLLOSTICTA alcides Ell. & Kellerm. n. sp., on Populus alba [associated with Leptosphæria alcides Sacc., of which it is apparently the spermogonial stage]. Ohio Naturalist, 2:223. March 1902.

PHYLLOSTICTA alcides Ell. & Kellerm. n. sp., on leaves of white Poplar, Populus alba. Ohio Naturalist, 2:223. March 1902. [Corrected description, Ohio Naturalist, 2:262. April 1902.]

PHYLLOSTICTA clypeata E. & E. n. sp., on living limbs of Pirus malus. Jour. Mycol. 8:15. May 1902.

PHYLLOSTICTA juliflora E. & B. n. sp., on pods of Prosopis juliflora. Jour. Mycol. 8:174. Dec. 1902.

PHYLLOSTICTA richardsoniæ E. & E. n. sp., on leaves of Richardsonia scabra. Jour. Mycol. 8:62. June 1902.

PHYLLOSTICTA virginica E. & E. a form of P. destruens Desm. Jour. Mycol. 8:15. May 1902.

PHYSALOSPORA lepachydis E. & E. n. sp., on living but partly faded leaves of Lepachys columnaris. Jour. Mycol. 8:16. May 1902.

PHYSALOSPORA minima E. & E. n. sp., on dead canes of Rubus strigosus. Jour. Mycol. 8:17. May 1902.

PHYSALOSPORA obtusa (Schw.) Cke. on Rubus villosus. Jour. Mycol. 8:67. June 1902.

PHYSALOSPORA vagans E. & E. n. sp., on dead, bleached canes of Rubus strigosus. Jour. Mycol. 8:67. June 1902.

PHYSCIA, *see Lichens — Physcia.* . . .

PHYTOLACCA decandra, host to Phoma apocrypta E. & E. n. sp. Jour. Mycol. 8:62. June 1902.

PIERCE, Newton B. Pear Blight in California [especially the Winter Blight]. Science, N. S. 16:193-4. 1 Aug. 1902.

PINE woods, matrix for Clitocybe subconcava Peck n. sp. N. Y. State Mus. Bull. 54:949. Nov. 1902.

PINUS contortus, new host to Cryptoporus volvatus (Peck) Shear. Bull. Torr. Bot. Club, 29:450. July 1902.

PINUS palustris, host to Hysterium compressum E. & E. n. sp. Jour. Mycol. 8:69. June 1902.

PINUS virginiana, new host to Cryptoporus volvatus (Peck) Shear. Bull. Torr. Bot. Club, 29:450. July 1902.

PINUS virginiana, scales of cones, host to Illosporium concolorum E. & E. n. sp. Bull. Torr. Bot. Club, 29:452. July 1902.

PIRICULARIA euphorbiae Atkinson, *syn of Passalora fasciculata q. v.*

PIRUS malus, host to Phyllosticta clypeata E. & E. n. sp. Jour. Mycol. 8:15. May 1902.

PLANT Diseases, Effect of Acetylene Gaslight on Plant Growth, and Plant Environment. [Abstract.] Frank William Rane. Science, N. S. 16:137. 25 July 1902.

PLANT Disease, Plant Environment and. [Abstract.] F. W. Rane. Science, N. S. 16:137. 25 July 1902.

PLANT Rusts (some Additions to the Flora of Indiana). William Stuart. Proc. Ind. Acad. Sci. 1901:283-4. 1902.

PLANT Pathology, *see Pathology, Plant.* . . .

PLASMOPARA vincetoxici E. & E. n. sp., on leaves of Vincetoxicum. Jour. Mycol. 8:70. June 1902.

PLATYGRAPHA plurilocularis A. Zahlbr. n. sp., ad corticem Rhoidis integrifoliae. Beihefte z. Bot. Centralbl. 13:156. 1902.

PLECTASCINEAE, *see Key to genera of.* . . .

PLECTOTHRIX Shear gen. nov. [related to Monosporium.] Bull. Torr. Bot. Club, 29:457. July 1902.

PLECTOTHRIX globosa Shear n. sp., on leaves of Vaccinium macrocarpon kept in a moist chamber. Bull. Torr. Bot. Club, 29:457. July 1902.

PLEOMASSARIA magnoliae Shear n. sp., on dead Magnolia obovata. Bull. Torr. Bot. Club, 29:455. July 1902.

PLEOSPHAERULINA cassiae P. Henn. n. sp., auf lebenden Blättern von Cassia reticulata W. Beiblatt zur Hedwigia, 41:(102). Mai-Juni 1902.

PLEOSPORA alismatis E. & E. n. sp., on dead stems of Alisma plantago. Jour. Mycol. 8:16. May 1902.

PLEOSPORA kansensis E. & E. n. sp., on dead stems of Melilotus alba. Jour. Mycol. 8:17. May 1902.

PLEUROTUS minutus Peck n. sp., much decayed wood of Birch. N. Y. State Mus. Bull. 54:949. Nov. 1902.

PLEUROTUS stratosus Atkinson n. sp., on rotting log. Jour. Mycol. 8:116. Oct. 1902.

PLUTEUS flavofuligineus Atkinson n. sp., on very rotten wood, woods. Jour. Mycol. 8:117. Oct. 1902.

PODOSPHAERA oxycanthae (DC.) De By., Interesting variations in the appendages of. J. G. Sanders. Jour. Mycol. 8:170. Dec. 1902.

POLYPORACEAE of North America. I. The Genus Ganoderma. [Monograph.] William Alphonso Murrill. Bull. Torr. Bot. Club, 29:599-608. Oct. 1902.

POLYPORUS borealis [as Tree-destroying, Atkinson]. Trans. Mass. Hort. Soc. 1901:111-15. 1902.

POLYPORUS castanophilus Atkinson n. sp., on decorticated and one-half rotted Chestnut logs. Jour. Mycol. 8:118. Oct. 1902.

POLYPORUS curtisii Berk., *syn. of Ganoderma pseudoboletus q. v.*

POLYPORUS holocyaneus Atkinson n. sp., on the ground under conifer trees (Picea or Tsuga). Jour. Mycol. 8:117. Oct. 1902.

POLYPORUS igniarius [as Tree-destroying, Atkinson.] Trans. Mass. Hort. Soc. 1901:119-123. 1902.

POLYPORUS laccatus Pers., *syn. of Ganoderma pseudoboletus q. v.*

POLYPORUS lucidus Fr., *syn. of Ganoderma pseudoboletus q. v.*

POLYPORUS oerstedii Fr., *syn. of Ganoderma oerstedii q. v.*

POLYPORUS sulphureus [as Tree-destroying, Atkinson.] Trans. Mass. Hort. Soc. 1901:115-9. 1902.

POPLAR, White, *see Populus alba*. . . .

POPULUS alba, host to Phyllosticta alcides Ell. & Kellerm. n. sp. Ohio Naturalist, 2:223, 262. March and April 1902.

POPULUS deltoides, host to Dothiorella multicocca E. & B. n. sp. Jour. Mycol. 8:174. Dec. 1902.

POPULUS monilifera, host to Cercospora sessilis E. & E. n. sp. Jour. Mycol. 8:71. June 1902.

POPULUS tremuloides, host to Solenopeziza fimbriata E. & B. n. sp. Jour Mycol. 8:174. Dec. 1902.

PORIA myceliosa Peck n. sp., forms patches several inches in extent on much decayed wood of hemlock. N. Y. State Mus. Bull. 54:952. Nov. 1902.

PORTULACA oleracea, host to Vermicularia oblongispora E. & E. n. sp. Jour. Mycol. 8:73. June 1902.

POTENTILLA fruticosa, host to Phragmidium andersoni Shear n. sp. Bull. Torr. Bot. Club, 29:453. July 1902.

PRASIOLA borealis, host to Guignardia alaskana Reed n. sp. Univ. Calif. Publications, Botany, 1:161. 20 Nov. 1902.

PRENANTHES crepidinea, host to Laestadia prenanthis E. & E. n. sp. Jour. Mycol. 8:66. June 1902.

PRENANTHES racemosa, host to Puccinia prenanthis-recemosæ Syd. n. sp. Monogr. Uredin. 1:137. 30 June, 1902.

PROSOPIS juliflora, host to Phyllosticta juliflora E. & B. n. sp. Jour. Mycol. 8:174. Dec. 1902.

PSATHYRELLA fragilis Earle n. sp. Bull. N. Y. Bot. Garden, 2:(344). 25 Apr. 1902.

PSEUDOPEZIZA holwayi P. Henn. n. sp., on Gentiana sp. Beiblatt zur Hedwigia, 41:(64). März-April 1902.

PSOROTICHIA squamulosa A. Zahlbr. n. sp., ad saxa granitica. Beihefte z. Bot. Centralbl. 13:158. 1902.

PTERIS aculeata Sw., host to Taphrina tonduziana P. Henn. n. sp. Beiblatt zur Hedwigia, 41:(104). Mai-Juni 1902.

PTERIS aquilina, dead rhizomes, host to Scleroderma pteridis Shear n. sp. Bull. Torr. Bot. Club, 29:451. July 1902.

PUCCINIA adenostegiæ Arthur n. sp., on Adenostegia pilosa (A. Gray) Greene (Cordylanthus pilosus Gray). Bull. Torr. Bot. Club, 29:231. Apr. 1902.

PUCCINIA affinis Syd. n. sp., on leaves of Verbesina trilobata. Monogr. Uredin. 1:174. 30 June 1902.

PUCCINIA albiperidia Arthur n. sp., on Ribes cynosbati L. [æciospores], and Carex pubescens Muhl. [teleutospores]. Jour. Mycol. 8:53. June 1902.

PUCCINIA ambigua Aut. p. p., *syn. of Puccinia chrondrioderma Lindroth n. sp. q. v.*

PUCCINIA aplopappi Syd. n. sp., on leaves of Aplopappus spinulosus & A. squarrosus. Monogr. Uredin. 1:8. 30 June 1902.

PUCCINIA arundinacea Hedw., *syn. of Puccinia rubella, q. v.*

PUCCINIA aspera Dietel & Holway n. sp., on Saxifraga mertensiana Bong. Bull. Torr. Bot. Club, 29:230. Apr. 1902.

PUCCINIA ballotæflora Long n. sp., on Salvia ballotæflora. Bull. Torr. Bot. Club, 29:116. Feb. 1902.

PUCCINIA barroetiæ Syd. n. sp., on leaves and stems of Barrœtia subuligera. Monogr. Uredin. 1:28. 30 June 1902.

PUCCINIA bouvardiæ Griffiths n. sp., on Bouvardia triphylla Salisb.. Bull. Torr. Bot. Club, 29:297. May 1902.

PUCCINIA burnettii Griffiths n. sp., on Stipa comata T. & R. Bull. Torr. Bot. Club, 29:298. May 1902.

PUCCINIA caricis-asteris Arthur n. sp., on Aster paniculatus Lam., Aster cordifolius L. [æcidiospores], and Carex fœnea Willd. Jour. Mycol. 8:54. June 1902.

PUCCINIA caricis-erigerontis Arthur n. sp., on Erigeron annuus (L.) Pers. [æcidiospores], and Carex festucacea Willd. [teleutospores]. Jour. Mycol. 8:53. June 1902.

PUCCINIA chasmatis E. & E. n. n. for P. circinans E. & E. Jour. Mycol. 8:15. May 1902.

PUCCINIA chondroderma Lindroth n. sp., in foliis Galii aparinis. Meddel. fr. Stockholms Högskolas botaniska Institute. Bd. IV. 1901.

PUCCINIA circinans E. & E., change to P. chasmatis E. & E. Jour. Mycol. 8:15. May 1902.

PUCCINIA cognita Syd. n. n. (Puccinia similis Long. nec. Ell. et Ev.). Monogr. Uredin. 1:172. 30 June 1902.

PUCCINIA cohæsa Long n. sp., on Anemone caroliniana. Bull. Torr. Bot. Club, 29:111. Feb. 1902.

PUCCINIA confluens Syd. n. sp., on leaves of Erigeron macranthus. Monogr. Uredin. 1:81. 30 June 1902.

PUCCINIA cooperiæ Long n. sp., on Cooperia drummondii. Bull. Torr. Bot. Club, 29:110. Feb. 1902.

PUCCINIA farinacea Long n. sp., on Salvia farinacea. Bull. Torr. Bot. Club, 29:115. Feb. 1902.

PUCCINIA fraxinata (Lk.) Arthur nom. nov. Bot. Gaz. 34:6. July 1902.

PUCCINIA galiorum Aut. p. p, *syn. of P. chondroderma Lind. q. v.*

PUCCINIA inclusa Syd. n. sp., on leaves of Cirsium (Cnicus) undulatus. Monogr. Uredin. 1:56. 30 June 1902.

PUCCINIA krigiæ Syd. n. sp., on leaves and stems of Krigia amplexicaulis. Monogr. Uredin. 1:104. 30 June 1902.

PUCCINIA micrantha Griffiths n. sp., on living leaves of Oryzopsis micrantha (T. & R.) Thurb. Bull. Torr. Bot. Club, 29:299. May 1902.

PUCCINIA muhlenbergiæ Arth. & Hol. n. sp., on Muhlenbergia diffusa Willd., M. mexicana (L.) Trin., M. racemosa (Mx.) B. S. P. (M. glomerata Trin.). Bull. Lab. Nat. Hist. State Univ. Iowa, 5:317. Oct. 1902.

PUCCINIA nanomitra Syd. n. sp., on leaves of Viguiera dentata. Monogr. Uredin. 1:182. 30 June 1902.

PUCCINIA, new species, *see Texas Fungi II.* . . .

PUCCINIA, new species, *see Texas Fungi. I.* . . .

PUCCINIA oregonensis Earle n. sp., on Sanicula bipinnata. Bull. N. Y. Bot. Garden, 2:(349). 25 Apr. 1902.

PUCCINIA panici Dietl. alternate form of Aecidium pammelii Trel. [Culture expt.— William Stuart.] Proc. Ind. Acad. Sci. 1901:284. 1902.

PUCCINIA peckii (De Toni) Kellerm. n. n. [Infection experiments and correction of Labels, Ohio Fungi.] W. A. Kellerman. Jour. Mycol. 8:20. May 1902.

PUCCINIA peckii (De Toni) Kellerm. n. n., on Onagra biennis (L.) Scop. [æcidiospores] and Carex trichocarpa [teleutospores]. Jour. Mycol. 8:20. May 1902.

PUCCINIA peridermiospora Arth., *syn. of Puccinia fraxinata, q. v.*

PUCCINIA phragmitis Körn., *syn. of Puccinia rubella, q. v.*

PUCCINIA phragmitis (Schum.) Körn., The finding of in Nebraska. [Abstract.] Science, N. S. 16:138. 25 July 1902.

PUCCINIA prenanthis-racemosæ Syd. n. sp., on leaves of Prenanthes racemosa. Monogr. Uredin. 1:137. 30 June 1902.

PUCCINIA pulsatillæ Rostr., *syn. of Pucc. suffusca, q. v.*

PUCCINIA punctoidea Syd. n. sp., on leaves of Viguiera pringlei. Monogr. Uredin. 1:182. 30 June 1902.

PUCCINIA pyrrhopappi Syd. n. sp., on leaves of Pyrrhopappus scaposus, and P. carolinianus. Monogr. Uredin. 1:138. 30 June 1902.

PUCCINIA recedens Syd. n. sp., on leaves of Senecio sp. Monogr. Uredin. 1:146. 30 June 1902.

PUCCINIA rubella (Pers.) Arthur nom. nov. Bot. Gaz. 34:15. July 1902.

PUCCINIA seymouriana Arthur n. sp., on Spartina cynosuroides (L.) Willd. Bot. Gaz. 34:11. July 1902.

PUCCINIA similis Long n. sp., on Verbesina virginica. Bull. Torr. Bot. Club, 29:113. Feb. 1902.

PUCCINIA similis Long, *syn. of Puccinia cognita q. v.*

PUCCINIA simillima Arthur n. sp., on Phragmites phragmites (L.) Karst. (P. communis Trin.). Bot. Gaz. 34:17. July 1902.

PUCCINIA sparganioides E. & B., *syn. of Puccinia fraxinata, q. v.*

PUCCINIA stephanomeriæ Syd. n. sp., on leaves and stems of Stephanomeria cichoriacea. Monogr. Ured. 1:157. 30 June 1902.

PUCCINIA suffusca Holway n. n. [Pucc. pulsatilla Rostr.] Jour. Mycol. 8:171. Dec. 1902.

PUCCINIA texana Holway & Long n. sp., on Berberis trifoliata. Bull. Torr. Bot. Club, 29:113. Feb. 1902.

PUCCINIA tosta Arthur n. sp., on leaves and sheaths of Sporobolus cuspidatus (Torr.) Wood; also on Sporobolus utilis Torr. and on Sporobolus asperifolius (N. & M.) Thurb. Bull. Torr. Bot. Club, 29:228. Apr. 1902.

PUCCINIA tosta luxurians Arthur n. var., on Sporobolus airoides Torr. Bull. Torr. Bot. Club, 29:229. Apr. 1902.

PUCCINIA turrita Arthur n. sp., on Saxifraga bronchialis L. Bull. Torr. Bot. Club, 29:230. Apr. 1902.

PUCCINIA windsoriæ Burrill non Schw., *syn. of Puccinia muhlenbergiae q. v.* . . .

PUCCINIA windsoriæ australis Anders., a synonym of Puccinia dochmia B. & C. [Sec. Arthur & Holway]. Bull. Lab. Nat. Hist. State Univ. Iowa, 5:315. Oct. 1902.

PUCCINIA ximenesiæ Long n. sp., on Verbesina encelioides Gray (Ximenesia encelioides Cav.). Bull. Torr. Bot. Club, 29: 114. Feb. 1902.

PUCCINIA zinnæ Syd. n. sp., on leaves of Zinnia tenuiflora. Monogr. Uredin. 1:182. 30 June 1902.

PUCCINIOPSIS caricæ Earle n. sp., on languishing leaves of Carica papaya. Bull. N. Y. Bot. Garden, 2:(340). 25 April 1902.

PULSATILLA hirsutissima, host to Puccinia suffusca Holway. Jour. Mycol. 8:171. Dec. 1902.

PYRRHOPAPPUS carolinianus, host to Puccinia pyrrhopappi Syd. n. sp. Monogr. Uredin. 1:139. 30 June 1902.

PYRRHOPAPPUS scaposus, host to Puccinia pyrrhopappi Syd. n. sp. Monogr. Uredin. 1:139. 30 June 1902.

PYXINE, *see Lichens — Theloschistes — Pyxine.* . . . .

QUERCUS alba, dead wood, host to Lachnum viridulum Massee & Morgan n. sp. Jour. Mycol. 8:186. Dec. 1902.

QUERCUS agrifolia, bark, matrix for Microglæna sychnogonoides A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:152. 1902.

QUERCUS tinctoria, dead fallen limbs, host to Cytispora pallida E. & E. n. sp. Jour. Mycol. 8:12. May 1902.

RADULUM Fr., *syn. of Tylodon q. v.* . . . .

RAMALINA, *see Lichens — Alectoria, Evernia and Ramalina.* .

RAMULARIA hydrophylli E. & E. n. sp., on Hydrophyllum capitatum. Jour. Mycol. 8: 14. May 1902.

RANE, Frank William. Effect of Acetylene Gas-light on Plant Growth, Plant Environment and Plant Diseases. [Abstract.] Science, N. S. 16:137. 25 July 1902.

RANE, F. W. Plant Environment and Plant Disease. [Abstract.] Science, N. S. 16:137. 25 July 1902.

RATIBIDA columnaris, host to Cercospora ratibidæ n. sp. Jour. Mycol. 8:177. Dec. 1902.

REED, Minnie. Two New Ascomycetous Fungi Parasitic on Algæ. Univ. Calif. Publications, Botany, 1:141-164. pl.15-16. 20 Nov. 1902.

RELATIONSHIP, Clues to, *see Rusts, Heteroecious, clues.* . . .

REPORT of the State Botanist 1901. Charles H. Peck. N. Y. State Mus. Bull. 54:931-984. *pl. K — L*, 77-81. Nov. 1902.

RESISTANCE to High Temperatures of spores and mycelium, *see Notes on the Comparative.* . . .

RHACHOMYCES anomalus Thaxter n. sp., on Conosoma pubescens Payk; growing appressed on the bristles which cover the abdomen near its tip. Proc. Am. Acad. Arts & Sci. 38:25. June 1902.

RHIZOCTONIA [as Tree-destroying, Atkinson]. Trans. Mass. Hort. Soc. 1901:129-130. 1902.

RHIZOCTONIA, A Disease of Potato Stems in Ohio, due to. [Abstract.] A. D. Selby. Science, N. S. 16:138. 25 July 1902.

RHIZOCTONIA solani Kuhn (Potato Failures). F. M. Rolfs. Colo. Agr. Exp. Sta. Bull. 70:1-20. 12 pl. March 1902.

RHIZOBIUM mutabile in Artificial Culture Media. Albert Schneider. Bot. Gaz. 34:109-113. 1pl. Aug. 1902.

RHODODENDRON maximum, decaying leaves, host to Eomycenella echinocephala Atkinson n. sp. Bot. Gaz. 34:37. July 1902.

RHUS copallina, host to Stemphylium copallinum E. & E. n. sp. Jour. Mycol. 8:73. June 1902.

RHUS integrifolia, bark, matrix for Platygrapha plurilocularis A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:157. 1902.

RHUS laurina, bark, matrix for Arthonia rhoidis A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:156. 1902.

RHUS radicans, host to Zythia rhoina E. & E. n. sp. Jour. Mycol. 8:13. May 1902.

RHUS toxicodendron, host to Dothiorella radicans E. & E. n. sp. Jour. Mycol. 8:11. May 1902.

RHYNCHOSPORA sp., host to Cintractia utriculicola (Henn.) Clint. n. sp. Jour. Mycol. 8:144. Oct. 1902.

RHYTISMA, A New Species of. W. A. Kellerman. Jour. Mycol. 8:50. June 1902.

RHYTISMA concavum Ell. & Kellerm. n. sp. Jour. Mycol. 8:51. June 1902.

RIBES cynosbati L., host to Aecidium albiperidium of Puccinia albiperidia Arthur n. sp. Jour. Mycol. 8:53. June 1902.

RICHARDSONIA scabra, host to Cercospora richardsoniae E. & E. n. sp. Jour. Mycol. 8:72. June 1902.

RICHARDSONIA scabra, host to Phyllosticta richardsoniae E. & E. n. sp. Jour. Mycol. 8:62. June 1902.

RICKER, P. L. Notes on some West American Fungi. [29 species, 1 new.] Jour. Mycol. 8:125-8. Oct. 1902.

RICKER, Percy Le Roy. A Preliminary List of Maine Fungi. The University of Maine Studies, No. 3, pp. 1-87. April 1902.

RICINUS communis, host to Cercospora canescens E. & M. Jour. Mycol. 8:73. June 1902.

RIDDELLIA cooperi Gray, host to Gymnoconia riddelliæ Griffiths n. sp. Bull. Torr. Bot. Club, 29:297. May 1902.

ROACH, a wingless small brown, host to Herpomyces arietinus Thaxter n. sp. Proc. Am. Acad. Arts & Sci. 38:15. June 1902.

ROBINIA pseudacacia, host to Fusicladium robiniae Shear n. sp. Bull. Torr. Bot. Club, 29:452. July 1902.

ROCKS, argillaceous, matrix to Endocarpon monicae A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:153. 1902.

ROCKS, argillaceo-schistose, matrix for Endocarpon wilmsoides A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:153. 1902.

ROCKS, calcareous, matrix for Lecania turicensis californica A. Zahlbr. n. var. Beihefte z. Bot. Centralbl. 13:159. 1902.

ROCKS, granite, matrix for Acarospora epilulescens A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:161. 1902.

ROCKS, granite, matrix for Dermatocarpon ecarosporoides A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:154. 1902.

ROCKS, granite, matrix for Heppia hassei A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:157. 1902.

ROCKS, granite, matrix for Psorotichia squamulosa A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:158. 1902.

ROLFS, F. M. Potato Failures (Rhizoctonia solani Kuhn.) Colo. Agr. Exp. Sta. Bull. 70:1-20. 12 pl. March 1902.

ROOT Rot of Apple trees, *see Thelephora galactina Fr., A Root Rot.* . . .

ROSELLINIA bigeloviae E. & E. Am. Nat. 1897, 341. [Corrected description.] Jour. Mycol. 8:16. June 1902.

ROT, Brown, of Stone fruits. [Monilia fructigena. Circular issued Jan. 1901.] Frederic T. Bioletti. Rep. Agr. Exp. Sta. Univ. Calif. 1898-1902:330-3. 1902.

ROT in Cauliflower and allied Plants, Preliminary Note on a New Organism producing. [Bacillus oleraceae n. sp.] F. C. Harrison. Science. N. S. 16:152. 25 July 1902.

ROT, A Soft, of Carrot and Other Vegetabes. [Caused by Bacillus carotovorus Jones.] L. R. Jones. An. Rep. Vt. Agr. Exp. Sta. 1899-1900, 13:299-332. 1 pl. 1901.

ROT, Orange and Lemon. [Pencillium digitatum.] C. W. Woodworth. Univ. Calif. Publications, Agr. Exp. Sta. Bull. 139:1-12. Feb. 1902.

ROT, Peach, *see Peach Rot.* . . .

SCHAFFNER, John H. Laboratory Outlines for the Elementary Study of Plant Structures and Plant Functions from the Standpoint of Evolution. VIII, Bacteria; IX, Slime Moulds. Jour. Appl. Micr. and Lab. Meth. 5:1798-9. May 1902.

SCHAFFNER, John H. Ohio Stations for Myriostoma. Jour. Mycol. 8:173. Dec. 1902.

SCHRENK, Hermann von. A Disease of the American Ash. [Polyporus fraxineus. Abstr.' of paper presented before Soc. Pl. Morphol. and Phys.] Science, N. S. 15:406. 14 March 1902.

SCHRENK, Hermann von. Decay of Timber and Methods of Preventing it. U. S. Dept. Agr., Bureau of Plant Industry, Bulletin 14:1-96. 18 pl. 25 March 1902.

SCHRENK, Hermann von. Notes on Diseases of Western Coniferæ. [Abstract.] Science, N. S. 16:138. 25 July 1902.

SCHRENK, Hermann von. On the Teaching of Vegetable Pathology. Bull. Torr. Bot. Club, 29:57-65. Feb. 1902.

SCHRENK, Hermann von. A Root Rot of Apple trees caused by Thelephora galactina Fr. Bot. Gaz. 34:65. July 1902.

SCHRENK, Hermann von. Section G, Botany. [Abstract, A. A. A. S. papers, 9 mycological subjects.] Science, N. S. 16: 136-140. 25 July 1902.

SCHRENK, Hermann von, and Spaulding, Perley. The Bitter Rot Disease of Apples. Science N. S. 16:669-670 21 Oct. 1902.

SCHNEIDER, Albert. Contributions to the Biology of Rhizobia. I. Rhizobium mutabile in Artificial Culture Media. Bot. Gaz. 34:109-113. 1 pl. Aug. 1902.

SCHNEIDER, Albert. Vegetable Parasites [as Causes Modifying the characteristics of Vegetable Powders]. Powdered Vegetable Drugs, 40-4. 1902.

SCLERODERMA pteridis Shear n. sp., growing attached to dead rhizomes of Pteris aquilina embedded in the earth. Bull. Torr. Bot. Club, 29:451. July 1902.

SCLEROSPORA graminicola (Sacc.): Studies in Phycomycete Fertilization. [Abstract.] F. L. Stevens. Science, N. S. 16:140. 25 July 1902.

SCLEROTINIA fructigena. J. B. S. Norton. Science, N. S. 16:34. 4 July 1902.

SCLEROTINIA fructigena. J. B. S. Norton. Trans. Acad. Sci. St. Louis, 12:91-7. 4 pl. 25 Aug. 1902.

SCLEROTINIA fructigena. [Abstract.] J. B. S. Norton. Science, N. S. 16:137. 25 July 1902.

SCLEROTINIA smilacinæ Durand n. sp., attached to decaying rhizomes of Smilacina racemosa. Bull. Torr. Bot. Club, 29: 462. July 1902.

SCLEROTIUM Disease, A, of the Huckleberry. [Sclerotinia vaccinii Wor.] B. O. Longyear. Rep. Mich. Acad. Sci. 3:61-2. 1 pl. 1901.

SCOLECOTRICHUM euphorbiæ Tracy & Earle, *syn. of Passalora fasciculata q. v.* . . .

SCOLECOTRICHUM fasciculatum (C. & E.) Shear n. n. [Fusicladium fasciculatum C. & E.]. Bull. Torr. Bot. Club, 29: 449. July 1902.

SCOLECOTRICHUM fasciculatum Shear, *syn. of Passalora fasciculata q. v.* . . .

SCORIAS spongiosa & Schizoneura imbricator, Relationship of a Fungus and a Scale Insect [Harshberger]. Jour. Mycol. 8: 160. Oct. 1902.

SECALE cereale, host to Nectria secalina E. & E. n. sp. Jour. Mycol. 8:66. June 1902.

SECOTIUM arizonicum Shear & Griffiths n. sp. Bull. Torr. Bot. Club, 29:450. July 1902.

SEDUM sp., host to Cercospora sedi E. & E. n. sp. Jour. Mycol. 8:72. June 1902.

SELBY, A. D. A Disease of Potato Stems in Ohio, due to Rhizoctonia. [Abstract.] Science, N. S. 16:138. 25 July 1902.

SELBY, Augustine D. The Future of Vegetable Pathology. Science, N. S. 15:736-740. 9 May 1902. An. Rep. Ohio Acad. Sci. 1901, 10:24-32. 1902.

SENECIO sp., host to Puccinia recedens Syd. n. sp. Monogr. Ured. 1:146. 30 June 1902.

SEPTORIA corydalis Ell. & Davis n. sp., on leaves of Corydalis glauca. Jour. Mycol. 8:13. May 1902.

SEPTORIA cyperi E. & E. n. sp., on Cyperus sp. Tuskegee, Ala. Jour. Mycol. 8:65. June 1902.

SEPTORIA liatridis Ell. & Davis n. sp., on leaves of Liatris spicata. Jour. Mycol. 8:13. May 1902.

SEPTORIA munroæ E. & B. n. sp., on leaves of Munroa squarrosa. Jour. Mycol. 8:176. Dec. 1902.

SEPTORIA pentstemonicola E. & E. n. sp., on leaves of Pentstemon gracilis. Jour. Mycol. 8:13. May 1902.

SEPTORIA spiculispora E. & E. n. sp., on leaves of Euonymus. Jour. Mycol. 8:12. May 1902.

SEQUOIA sempervirens, host to Hypodermopsis sequoiæ Earle n. sp. Bull. N. Y. Bot. Garden, 2:(345). 25 Apr. 1902.

SESAMUM orientale, host to Metasphæria carveri E. & E. n. sp. Jour. Mycol. 8:68. June 1902.

SHEAR, C. L. Arachniotus trachyspermus, A New Species of the Gymnoascaceæ. [Abstract.] Science, N. S. 16:138. 25 July 1902.

SHEAR, C. L. Generic Nomenclature. Bot. Gaz. 33:220-229. March 1902.

SHEAR, C. L. Mycological Notes and New Species. Bull. Torr. Bot. Club, 29:449. July 1902.

SHELDON, John L. Preliminary Studies on the Rusts of the Asparagus and the Carnation: Parasitism of Darluca. [Inoculation experiments.] Science, N. S. 16:235-7. 8 Aug. 1902.

SILENE watsoni, host toUstilago violacea var. major Clint. n. var. Jour. Mycol. 8:139. Oct. 1902.

SILSBEE, Francis H. Volvaria volvacea in Lawrence, Massachusetts. Rhodora, 4:3-5. January 1902.

SMILACINA racemosa, decaying rhizomes, host to Sclerotinia smilacinæ Durand n. sp. Bull. Torr. Bot. Club, 29:463. July 1902.

SMILAX hispida, host to Ascochyta smilacis E. & E. n. sp. Jour. Mycol. 8:12. May 1902.

SMILAX, a white berried, host to Botryosphæria muriculata E. & E. n. sp. Jour. Mycol. 8:68. June 1902.

SMITH, Erwin F. Plant Pathology: A Retrospect and Prospect. Science, N. S. 15:601-612. 18 April 1902.

SMITH, Ralph E. Parasitism of Botrytis cinerea. Bot. Gaz. 33: 421-436.

SMUT, Corn, Notes upon. [More than usually abundant, 1901.] Byron D. Halsted. An. Rep. N. Y. Exp. Sta. 1901, 22:437. 1902.

SMUT infection experiments. [Cintractia sorghi, C. reiliana, and Ustilago zeæ.] W. A. Kellerman & O. E. Jennings. Ohio Naturalist, 2:258-261. April 1902.

SOIL, Bacteria in the, *see the Bacteria in the soil.* . . .

SOIL, burnt, on a sandy hillside, matrix for Leptonia rosea Longyear n. sp. Rep. Mich. Acad. Sci. 3:59. 1901.

SOIL, damp, matrix to Amanitopsis vaginata crassivolvata Peck n. var. Bull. Torr. Bot. Club, 29:563. Sept. 1902.

SOIL, Moss covered, in Oak woods, matrix for Lactarius brevipes Longyear n. sp. Rep. Mich. Acad. Sci. 3:59. 1901.

SOIL, naked or soil in upland woods, matrix for Lactarius subserifluus Longyear n. sp. Rep. Mich. Acad. Sci. 1901, 3:57. 1902.

SOIL (path), hard-packed, wooded, matrix for Hydnum humidum Banker n. sp. Bull. Torr. Bot. Club, 29:553. Sept. 1902.

SOIL, rich damp and leaf mould, matrix for Hydnum boreale Banker n. sp. Bull. Torr. Bot. Club, 29:553. Sept. 1902.

SOIL, rich, in woods, matrix for Boletus scabripes Peck n. sp. Bull. Torr. Bot. Club, 29:555. Sept. 1902.

SOIL, sandy, matrix to Dictybole texensis Atkinson & Long n. sp. Bot. Gaz. 34:43. July 1902.

SOIL, sandy, under pine trees, matrix for Russula ventricosipes Peck. n. sp. Bull. Torr. Bot. Club, 29:71. Feb. 1902.

SOIL, sandy, matrix for Tricholoma niveipes Peck n. sp. Bull. Torr. Bot. Club, 29:69. Feb. 1902.

SOLENOPEZIZA fimbriata E. & B. n. sp., on decorticated logs of Populus tremuloides. Jour. Mycol. 8:174. Dec. 1902.

SORDARIA sp., host to Eoterfezia parasitica Atkinson n. sp. Bot. Gaz. 34:41. July 1902.

SORGHUM vulgare, host to Macrosporium ornatissimum E. & B. n. sp. Jour. Mycol. 8:178. Dec. 1902.

SOROSPORIUM bigeloviæ Griffiths n. sp., on Bigelovia. Bull. Torr. Bot. Club, 29:295. May 1902.

SOROSPORIUM californicum Hark., *syn. of Thecaphora californica q. v.*

SOROSPORIUM cuneatum Schof., *syn. of Thecaphora cuneata q. v.*

SOROSPORIUM ellisii var. occidentalis Seym., *syn. of Sphacelotheca occidentalis q. v.*

SOROSPORIUM ellisii var. provincialis Ell. & Gall., *syn. of Sorosporium provinciale q. v.*

SOROSPORIUM provinciale (Ell. & Gall.) Clint. n. sp. (Sorosporium ellisii var. provincialis Ell. & Gall.); host, Andropogon furcatus. Jour. Mycol. 8:145. Oct. 1902.

SOROSPORIUM williamsii Griffiths n. sp., attacking the sheathed culms of Stipa richardsonii Link. Bull. Torr. Bot. Club, 29:296. May 1902.

SPARTINA cynosuroides (L.) Willd., host to Puccinia seymouriana Arthur n. sp. Bot. Gaz. 34:11. July 1902.

SPARTINA stricta, host to Fusarium spartinæ E. & E. n. sp. Jour. Mycol. 8:14. May 1902.

SPARTINA stricta, host to Phyllachora serialis E. & E. n. sp. Jour. Mycol. 8:18. May 1902.

SPAULDING, Perley, and Schrenk, Hermann von, *see Schrenk Hermann von.* . . .

SPHACELOTHECA andropogonis-hirtifolii (Henn.) Clint. n. n. [Ustilago andropogonis-hirtifolii Henn., U. andropogonis-saccharoidis Henn.] Jour. Mycol. 8:141. Oct. 1902.

SPHACELOTHECA diplospora (Ell. & Ev.) Clint. n. n. [Ustilago diplospora Ell. & Ev.] Jour. Mycol. 8:140. Oct. 1902.

SPHACELOTHECA ischæmi (Fckl.) Clint. n. n. [Ustilago ischæmi Fckl., Ustilago cylindrica Pk., Cintractia ischæmi Syd.] Jour. Mycol. 8:140. Oct. 1902.

SPHACELOTHECA monilifera (Ell. & Ev.) Clint. n. n. [Ustilago monilifera E. & Ev., U. andropogonis-contorti Henn. n. sp. in Herb. Holway.] Jour. Mycol. 8:141. Oct. 1902.

SPHACELOTHECA montaniensis (Ell. & Holw.) Clint. n. n. [Ustilago montaniensis Ell. & Holw.] Jour. Mycol. 8:141. Oct. 1902.

SPHACELOTHECA occidentalis (Seym.) Clint. n. n. [Sorosporium ellisii var. occidentalis Seym., Ustilago andropogonis Kell. & Sw.] Jour. Mycol. 8:141. Oct. 1902.

SPHACELOTHECA pamparum (Speg.) Clint. n. n. [Ustilago setariæ Niessl?, Ustilago pamparum Speg., Ustilago kolaczekii Kühn.] Jour. Mycol. 8:140. Oct. 1902.

SPHACELOTHECA paspali-notati (Henn.) Clint. n. n. (Ustilago paspali-notati Henn. n. sp. in Herb. Holway); host, Paspalum notatum. Jour. Mycol. 8:141. Oct. 1902.

SPHACELOTHECA reiliana (Kühn) Clint. n. n. [Ustilago reiliana Kühn, Cintractia reiliana Clint.] Jour. Mycol. 8:141. Oct. 1902.

SPHACELOTHECA sorghi (Lk.) Clint. n. n. [Ustilago sorghi Pass., Cintractia sorghi-vulgaris Clint.] Jour. Mycol. 8:140. Oct. 1902.

SPHÆRELLA cœrulea E. & E.,*syn. of Mycosphaerella coerulea q. v.*

SPHÆRELLA yuccæ E. & E. n. sp., on leaves of Yucca filamentosa. Jour. Mycol. 8:67. June 1902.

SPHÆROPSIS begoniicola E. & E. n. sp., on Begonia, cultivated. Jour. Mycol. 8:63. June 1902.

SPHÆROPSIS grandiflora E. & E. n. sp., on dead leaves of Magnolia grandiflora. Jour. Mycol. 8:63. June 1902.

SPHÆROPSIS persicæ E. & B. n. sp., on dead limbs of Amygdalus persica. Jour. Mycol. 8:175. Dec. 1902.

SPHÆROPSIS sabalicola Ell. & Carver. n. sp., on Sabal adansonii. Jour. Mycol. 8:63. June 1902.

SPHÆROPSIS salicis E. & B., n. sp., on dead shoots of Salix cordata. Jour. Mycol. 8:175. Dec. 1902.

SPHÆROPSIS stictoides Earle n. sp., on fallen rotten leaves of Eucalyptus sp. Bull. N. Y. Bot. Garden, 2:(348). 25 Apr. 1902.

SPHÆROSTILBE coccophila or Disease of San Jose Scale. H. A. Gossard. Fla. Agr. Exp. Sta. Bull. 61:487-491. July 1902.

SPORE Resistance of Loose Smut of Wheat to Formalin and Hot Water. William Stuart. Proc. Ind. Acad. Sci. 1901:275-282. 1902.

SPORES, germination of, *see Agaricus campestris, A preliminary study, etc.*

SPOROBOLUS airoides Torr., host to Puccinia tosta luxurians Arthur n. var. Bull. Torr. Bot. Club, 29:229. Apr. 1902.

SPOROBOLUS asperifolius (N. & M.) Thurb., host to Puccinia tosta Arthur n. sp. Bull. Torr. Bot. Club, 29:229. Apr. 1902.

SPOROBOLUS cuspidatus (Torr.) Wood, host to Puccinia tosta Arthur n. sp. Bull. Torr. Bot. Club, 29:229. Apr. 1902.

SPOROBOLUS utilis Torr., host to Puccinia tosta Arthur n. sp. Bull. Torr. Bot. Club, 29:229. Apr. 1902.

SPOROCYSTIS Morgan n. g. [Tuberculariaceæ.] Jour. Mycol. 8:169. Dec. 1902.

SPOROCYSTIS condita Morgan n. sp., on old leaves in woods. Jour. Mycol. 8:169. Dec. 1902.

SPOROSCHISMA tracyi Earle n. sp., on dead twigs of Ilex sp. Bull. N. Y. Bot. Garden, 2:(339). 25 Apr. 1902.

SQUASH, *see Crookneck squash, host.* . . .

STACHYBOTRYELLA E. & B. n. gen. [Differs from Stachybotrys in its paler color, creeping habit and absence of any perceptible basidia, the conidia arising directly from the slightly swollen, minutely roughened apex of the fertile hyphæ.] Jour. Mycol. 8:177. Dec. 1902.

STACHYBOTRYELLA repens E. & B. n. sp., on living leaves of verbesina virginica. Jour. Mycol. 8:177. Dec. 1902.

STAGONOSPORA biformis E. & B. n. sp., on small, decorticated limbs of apple tree. Jour. Mycol. 8:176. Dec. 1902.

STAMNARIA americana Massee & Morgan n. sp., on dead stems of Equisetum hyemale. Jour. Mycol. 8:183. Dec. 1902.

STEMONITIS, Key to 7 Indiana species. [Whetzel.] Proc. Ind. Acad. Sci. 1901:265-6. 1902.

STEMONITIS, notes on the Genus. H. H. Whetzel. Proc. Ind. Acad. Sci. 1901:261-6. 1902.

STEMPHYLIUM copallinum E. & E. n. sp., on leaves of Rhus copallina. Jour. Mycol. 8:73. June 1902.

STEMS, woody, host to Ohleriella neo-mexicana Earle n. sp. Bull. N. Y. Bot. Garden, 2:(349). 25 Apr. 1902.

STEVENS, F. L. Studies in Phycomycete Fertilization; Sclerospora Graminicola (Sacc.) [Abstract.] Science, N. S. 16: 140. 25 July 1902.

STEVENS, Frank Lincoln. Studies in the Fertilization of Phycomycetes. [Sclerospora.] Bot. Gaz. 34:420-5, *pl 17* Dec. 1902.

STICHOMYCES stilicolus Thaxter n. sp., on the thorax, prothorax and adjacent legs of Stilicus angularis Lec. Proc. Am. Acad. Arts & Sci. 38:24. June 1902.

STICKS, decayed, host to Xylaria californica Earle n. sp. Bull. N. Y. Bot. Garden, 2:(348). 25 Apr. 1902.

STICKS, decaying, on ground in woods, host to Lepiota cyanozonata Longyear n. sp. Rep. Mich. Acad. Sci. 3:57. 1901.

STILICUS angularis Lec., host to Corethromyces longicaulis Thaxter n. sp. Proc. Am. Acad. Arts and Sci. 38:21. June 1902.

STILICUS angularis Lec., host to Stichomyces stilicolus Thaxter n. sp. Proc. Am. Acad. Arts and Sci. 38:25. June 1902.

STIPA comata T. & R., host to Puccinia burnettii Griffiths n. sp. Bull. Torr. Bot. Club, 29:298. May 1902.

STIPA comata, host to Urocystis granulosa Clint. n. sp. Jour. Mycol. 8:151. Oct. 1902.

STIPA richardsonii Link., host to Sorosporium williamsii Griffiths n. sp. Bull. Torr. Bot. Club, 29:296. May 1902.

STIPITATE and Sessile Geasters. [G. rufescens & G. minimus, sessile when fresh, pedicellate when dry.] C. G. Lloyd. Mycological Notes [198.] No. 11:112. Dec. 1902.

STREPTOCOCCI characteristic of sewage and sewage-polluted waters apparently not hitherto reported in America. C. E. A. Winslow & M. P. Hunnewell. Science, N. S. 15:827-9. 23 May 1902.

STROPHARIA coprinophila Atkinson n. sp., parasitic on clusters of Coprinus atramentarius. Jour. Mycol. 8:118. Oct. 1902.

STUDIES in North American Discomycetes. I. The Genus Holwaya Sacc. Elias J. Durand. Bull. Torr. Bot. Club, 28: 349-355. June 1901.

STUDIES in North American Discomycetes. II. Some New or Noteworthy Species from Central and Western New York. Elias J. Durand. Bull. Torr. Bot. Club, 29:458-465. July 1902.

STUDIES on Urnula and Geopyxis. Elsie M. Kupfer. Bull. Torr. Bot. Club, 29:137-144. 1 pl. March 1902.

STUMPS, around decaying, matrix for Clitocybe marginata Peck n. sp. Bull Torr. Bot. Club, 29:558. Sept. 1902.

STYSANUS stemonites, *see Brown Disease of Potatoes*. . . .

STEWART, F. C. and Harding, H. A., *see Harding, H. A. and.*

STUART, William. Plant Rusts (Some Additions to the Flora of Indiana). Proc. Ind. Acad. Sci. 1901:283-4. 1902.

STUART, William. Spore Resistance of Loose Smut of Wheat to Formalin & Hot Water. Proc. Ind. Acad. Sci. 1901:275-282. 1902.

SUGAR Beet, some Diseases of, *see Diseases, Some*, ...

SUPPLEMENTARY Notes on the Erysiphaceae. Ernest S Salmon. Bull. Torr. Bot. Club, 29:1-22, 83-109, 181-210, 302-316. 2 pl. Jan., Feb., Apr., May 1902.

SUPPLEMENTARY Notes on the Erysiphaceae Addenda. E. E. Salmon. Bull. Torr. Bot. Club, 29:647-9. Nov. 1902.

SWARTZIA sp., host to Phyllachora copeyensis P. Henn. n. sp. Beiblatt zur Hedwigia, 41:(103). Mai-Juni 1902.

SYMPHORICARPOS occidentalis, host to Torula brachiata E. & B. n. sp. Jour. Mycol. 8:176. Dec. 1902.

SYNONOMY of Irpex tulipiferae Schw., *see Irpex*. . . .

SYNONYMS of Ustilagineæ. [G. P. Clinton.] Jour. Mycol. 8: 129. Oct. 1902.

TACHYS incurvus Say, host to Laboulbenia tachys Thaxter n. sp. Proc. Am. Acad. Arts & Sci. 38:39. June 1902.

TACHYUSA sp., host to Monoicomyces nigrescens Thaxter n. sp. Proc. Am. Acad. Arts & Sci. 38:11. June 1902.

TAGETES patula, host to Cercospora tageticola E. & E. n. sp. Jour. Mycol. 8:72. June 1902.

TAPESIA derelicta Morgan n. sp., on old wood & Mosses. Jour. Mycol. 8:186. Dec. 1902.

TAPHRINA tonduziana P. Henn. n. sp., in foliis vivis Pteridis aculeatae Sw. Beiblatt zur Hedwigia, 41:(104). Mai-Juni 1902.

TEA plant, cult., host to Colletotrichum carveri E. & E. n. sp. Jour. Mycol. 8:65. June 1902.

TEXAS Fungi. — I. Some new species of Puccinia. W. H. Long, Jr. Bull. Torr. Bot. Club, 29:110-116. Feb. 1902.

THAXTER, Roland. Preliminary Diagnoses of New Species of Laboulbeniaceae, V. Proc. Amer. Acad. Arts & Sci. 38:9-57. June 1902.

THECAPHORA californica (Hark.) Clint. n. n. [Sorosporium californicum Hark.] Jour. Mycol. 8:146. Oct. 1902.

THECAPHORA mexicana Ell. & Ev. n. sp.; host Guardiola platyphylla. Jour. Mycol. 8:146. Oct. 1902.

THECAPHORA cuneata (Schof.) Clint. n. n. [Sorosporium cuneatum Schof.] Jour. Mycol. 8:146. Oct. 1902.

THELEPHORA candida (Schw.) Fr. [Merisma candida Schw.] Syn. of Tremellodendron candidum (Schw.) Atkinson n. n. Jour. Mycol. 8:106. Oct. 1902.

THELEPHORA exigua Peck n. sp., vegetable mold. N. Y. State Mus. Bull. 54:953. Nov. 1902.

THELEPHORA galactina Fr., A Root Rot of Apple trees caused by. Hermann von Schrenk. Bot. Gaz. 34:65. July 1902.

THELOSCHISTES, *see Lichens — Theloschites — Pyxine.* . .

THERMOPSIS arenaria, host to Cercospora thermopsidis Earle n. sp. Bull. N. Y. Bot. Garden, 2:(349). 25 Apr. 1902.

THIELAVIOPSIS ethaceticus. [The Field Treatment of Cane Cuttings in Reference to Fungoid Diseases, Albert Howard.] W. I. Bull. 3:73-86. 1902.

THISTLETON — Dyer, William T. Note on the Sugar-cane Disease of the West Indies. W. I. Bull. 2:211-216. 1901.

TILLANDSIA leiboldiana, host to Ustilago tillandsiae Patters n. sp. Jour. Mycol. 8:135. Oct. 1902.

TILLANDSIA sp., host to Ustilago tillandsiae Patters. n. sp. Jour. Mycol. 8:135. Oct. 1902.

TILLETIA calamagrostis Fckl., *syn. of Ustilago calamagrostidis q. v.*

TILLETIA cathesteci (Henn.) Clint. n. n. [Ustilago cathesteci Henn.] Jour. Mycol. 8:149. Oct. 1902.

TILLETIA horrida Tak. on Rice in South Carolina. Alexander P. Anderson. Bull. Torr. Bot. Club, 29:35-6. January 1902.

TILLETIA earlii Griffiths n. sp., affecting the culms of Agropyron occidentale Scribn. Bull. Torr. Bot. Club, 29:290. May 1902.

TILLETIA externa Griffiths n. sp., affecting ovaries of Carex filifolia Nutt. Bull. Torr. Bot. Club, 29:290. May 1902.

TILLETIA externa Griff., *syn. of Cintractia externa q. v.*

TILLETIA maclagani (Berk.) Clint. n. n. [Ustilago maclagani Berk., Ustilago rotundata Arth., Tilletia rotundata Ell. & Ev., Tilletia rotundata Mass.] Jour. Mycol. 8:148. Oct. 1902.

TILLETIA rotundata Eli. & Ev., *syn. of Tilletia maclagani q. v.*

TILLETIA rotundata Mass., *syn. of Tilletia maclagani q. v.* . .

TILLETIA texana Long n. sp., host, Hordeum pratense. Jour. Mycol. 8:149. Oct. 1902.

TIMBER, decay of, *see Decay of Timber.* . . .

TOADSTOOLS, Box Tortoises and [Harshberger]. Jour. Mycol. 8: 156. Oct. 1902.

TOLYPOSPORELLA brunkii (Ell. & Gall.) Clint. n. n. [Ustilago (Sorosporium) brunkii Ell & Gall., Ustilago apiculata Ell. & Gall.] Jour. Mycol. 8:147. Oct. 1902.

Discard "Tolysporium eriocauli" etc., and substitute:—

TOLYPOSPORIUM eriocauli G. P. Clinton n. s., on Eriocaulon septangulare With. Rhodora, 3:82. April 1901.

TOMATOES, host to Lasiodiplodia tubericola E. & E. Jour. Mycol. 8:65. June 1902.

TORULA brachiata E. & B. n. sp., on dead branches of Symphoricarpos occidentalis. Jour. Mycol. 8:176. Dec. 1902.

TORULA sepulta E. & B. n. sp., on old pine wood saturated with pitch, under side of an old pine board lying on the ground and on a pine post below the surface of the ground. Jour. Mycol. 8:177. Dec. 1902.

TOWNSEND, Charles O. Black Knot. Md. State Hort. Dept. Md. Agr. Coll. Circ. 30:1-4. 22 Apr. 1901.

TOWNSEND, Charles O. Cantaloupe Blight. [Macrosporium curcumerium.] Md. State Hort. Dept. Md. Agr. Coll. Circ. 32:1-2. 1 June 1901.

TOWNSEND, C. O. Some Diseases of the Sugar Beet. U. S. Dept. Agr. Rep. No. 72, 1901:90-101. 1902.

TOXIC properties of some copper compounds with special reference to Bordeaux Mixture. [Fifteen fungi used in the cultures.] Judson F. Clark. Bot. Gaz. 33:26-48. Jan. 1902.

TOXINS, Bacterial, *see Bacterial Toxins.* . . .

Discard "Tracy Syd. nom." etc., and substitute:—

TRACYA Syd. nom. nov. (replacing Cornuella). Beiblatt zur Hedwigia, 40:(2). Jan.-Feb. 1901.

TRAMETES abietis [as Tree-destroying, Atkinson]. Trans. Mass. Hort. Soc. 1901:123-8. 1902.

TREES, deciduous, host to Ganoderma sessile Murrill n. sp. Bull. Torr. Bot. Club, 29:604. Oct. 1902.

TREMATOSPHÆRIA cactorum Earle n. sp., on old spines of Cereus sp. Bull. N. Y. Bot. Garden, 2:(347). 25 Apr. 1902.

TREMELLODENDRON Atkinson n. g. [Tremellineæ.] Jour. Mycol. 8:106. Oct. 1902.

TREMELLODENDRON candidum (Schw.) Atkinson n. n. [Merisma candida Schw.] Jour. Mycol. 8:106. Oct. 1902.

TRICHOLOMA humile bulbosum Pk. n. var. The Univ. of Maine Studies, No. 3. Preliminary List of Maine Fungi, 61. April 1902.

TRICHOLOMA niveipes Peck n. sp., sandy soil under or near pine trees. Bull. Torr. Bot. Club, 29:69. Feb. 1902.

TRICHOLOMA rimosum Peck n. sp., woods. N. Y. State Mus. Bull. 54:947. Nov. 1902.

TRICHOPTERYX haldemani Lec., host to Ecteinomces trichopterophilus Thaxter n. sp. Proc. Am. Acad. Arts & Sci. 38:27. June 1902.

TRICUSPIS seslerioides, *see Triodea cuprea.* . . .

TRIODEA cuprea (Tricuspis seslerioides), host to Ustilago tricuspidis Ell. & Gall. n. sp. Jour. Mycol. 8:136. Oct. 1902.

TRIPOSPORIUM aurantii P. Henn. n. sp., auf lebenden Blättern von Citrus aurantium. Beiblatt zur Hedwigia, 41:(104). Mai-Juni 1902.

TROUT, Salvelinus fontinalis & Cristivomer namaycush, [domesticated], hosts to Bacterium truttæ Marsh n. sp. Science, N. S. 16:706. 31 Oct. 1902.

TRUE, Rodney H. The Prevention of Moulds on Cigars. Science, N. S. 16:115-6. 18 July 1902.

TSUGA canadensis, decaying trunks and roots, host to Ganoderma tsugae Murrill n. sp. Bull. Torr. Bot. Club, 29:601. Oct. 1902.

TULIP Mould. [Botrytis parasitica Cav.] Byron D. Halsted. An. Rep. N. J. Exp. Sta. 1901:438-440. 1902.

TWIGS, host to Nidula microcarpa rugispora White n. var. Bull. Torr. Bot. Club, 29:272. May 1902.

TWIGS, slender, host to Helotium delectabile Massee & Morgan. Jour. Mycol. 8:184. Dec. 1902.

TYLODON Banker nov. gen. [Hydnaceæ]. Bull. Torr. Bot. Club, 29:440. July 1902.

ULMUS sp., dead exposed roots, host to Haplosporella rhizophila Shear n. sp. Bull. Torr. Bot. Club, 29:456. July 1902.

ULVA californica Wille, host Guignardia ulvae Reed n. sp. Univ. Calif. Publications, Botany, 1:160. 20 Nov. 1902.

UMBELLULARIA californica, bark, matrix for Arthopyrenia parvula A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:150. 1902.

UMBELLULARIA californica, bark, matrix for Opeographa umbellulariae A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:-154. 1902.

UMBILICARIA, *see Lichens — Umbilicaria.* . . .

UNDERWOOD, Lucien M. Conservatism of Energy in Mycological Clubs. Torreya, 2:1-2. Jan. 1902.

UNDERWOOD, L. M. The Bracket Fungi. Torreya, 2:87-90. June 1902.

UREDINEAE, The American, IV. J. C. Arthur and E. W. D. Holway. Bull. Lab. Nat. Hist. State Univ. Iowa, 5:311-334. *pl.* 1-9. Oct. 1902.

UREDINEAE — Collecting & Preserving, *see Fungi Collecting.*

UREDINEAE, Cultures of, in 1900 & 1901. J. C. Arthur. Jour. Mycol. 8:51-6. June 1902.

UREDINEAE Exsiccatae et Icones. Fascicle IV. [Species 45-60, 49 packets, photo-engraved drawings, and heliotype reproductions from photographs.] J. C. Arthur and E. W. D. Holway. Dec. 1902.

USTILAGO andropogonis-saccharoidis Henn., *syn. of Sphacelotheca andropogonis-saccharoidis q. v.*

USTILAGO apiculata Ell. & Gall., *syn. of Tolyposporella q. v.*

USTILAGO (Sorosporium?) brunkii Ell. & Gall., *syn. of Tolyposporella brunkii q. v.*

USTILAGO calamagrostidis (Fckl.) Clint. n. n. [Tilletia calamagrostis Fckl.] Jour. Mycol. 8:138. Oct. 1902.

USTILAGO cathesteci Henn., *syn. of Tilletia cathesteci q. v.*

USTILAGO cylindrica Pk., *syn. of Sphacelotheca ischaemi q. v.*

USTILAGO diplospora Ell. & Ev., *syn. of Sphacelotheca diplospora q. v.*

USTILAGO elegans Griffiths n. sp., on Chloris elegans H. B. K. Bull. Torr. Bot. Club, 29:292. May 1902.

USTILAGO eriocauli Clint., *syn. of Ustilago eriocauli (Mass.) q. v.*

USTILAGO eriocauli (Mass.) Clint. n. n. [Cintractia eriocauli Mass., Ustilago eriocauli Clint.] Jour. Mycol. 8:137. Oct. 1902.

USTILAGO festucae-tenellae P. Henn. n. sp., on Festuca tenella. Beiblatt zur Hedwigia, 41:(61). März-April 1902.

USTILAGO ischaemi Fckl., *syn. of Sphacelotheca ischaemi q. v.*

USTILAGO kolaczekii Kuhn., *syn. of Sphacelotheca pamparum q. v.*

USTILAGO luzulæ Sacc., *syn. of Cintractia luzulae q. v.*

USTILAGO maclagani Berk., *syn. of Tilletia maclagani q. v.*

USTILAGO monilifera Ell. & Ev., *syn. of Sphacelotheca monilifera q. v.*

USTILAGO montaniensis Ell. & Holw., *syn. of Sphacelotheca montaniensis q. v.*

USTILAGO muhlenbergiae Clint. n. sp.; host, Muhlenbergia texana. Jour. Mycol. 8:133. Oct. 1902.

USTILAGO muhlenbergiae P. Henn. n. sp., on Muhlenbergia pringlei. Beiblatt zur Hedwigia, 41:(61). März-April 1902.

USTILAGO pamparum Speg., *syn. of Sphacelotheca pamparum q. v.*

USTILAGO psilocaryae Tr. & Earle, *syn. of Cintractia psilocaryae q. v.*

USTILAGO reiliana Kühn., *syn. of Sphacelotheca reiliana q. v.*

USTILAGO residua Clint. n. sp., hosts, Danthonia compressa, D. spicata, D. sp. Jour. Mycol. 8:133. Oct. 1902.

USTILAGO rotundata Arth., *syn. of Tilletia maclagani q. v.* . .

USTILAGO setariæ Niessel?, *syn. of Sphacelotheca pamparum q. v.*

USTILAGO sorghi Pass., *syn. of Sphacelotheca sorghi q. v.* . .

USTILAGO taubertiana Henn., *syn. of Cintractia taubertiana q. v.*

USTILAGO tillandsiæ Patters. n. sp., hosts, Tillandsia leiboldiana, n. sp. Jour. Mycol. 8:135. Oct. 1902.

USTILAGO tricuspidis Ell. & Gall. n. sp., host, Triodia cuprea (Tricuspis seslerioides). Jour. Mycol. 8:137. Oct. 1902.

USTILAGO violacea var. major Clint. n. var., host, Silene watsoni. Jour. Mycol. 8:139. Oct. 1902.

VACCINIUM macrocarpon, host to Pestalozzia quepini vaccinii Shear subsp. nov. Bull. Torr. Bot. Club, 29:456. July 1902.

VARIATIONS in the appendages, *see Podosphaera oxycanthae.* .

VAUGHAN, V. C. Nature of the Specific Bacterial Toxins. Science, N. S. 16:312-4. 22 Aug. 1902.

VEGETABLE Mold, matrix for Thelephora exigua Peck n. sp. N. Y. State Mus. Bull. 54:953. Nov. 1902.

VEGETABLE Parasites [as Causes Modifying the Characteristics of Vegetable Powders]. Powdered Vegetable Drugs, 40-4. 1902.

VEGETABLE Pathology, *see Pathology, Vegetable.* . . .

VENTURIA inæqualis (Cke.) Wint. [Nomenclature of Apple Scab, G. P. Clinton.] Ill. Agr. Exp. Sta. Bull. 67:123. Dec. 1901.

VENTURIA nebulosa E. & E. n. sp., on dead leaves of Eragrostis sp. Jour. Mycol. 8:66. June 1902.

VENTURIA rubicola E. & E. n. sp., on dead canes of Rubus occidentalis. Jour. Mycol. 8:15. May 1902.

VERBESINA encelioides Gray (Ximenesia encelioides Cav.), host to Puccinia ximenesiæ Long n. sp. Bull. Torr. Bot. Club, 29:115. Feb. 1902.

VERBESINA virginica, host to Stachybotryella repens E. & B. n. sp. Jour. Mycol. 8:177. Dec. 1902.

VERBESINA trilobata, host to Puccinia affinis Syd. n. sp. Monogr. Uredin. 1:174. 30 June 1902.

VERBESINA virginica, host to Puccinia similis Long n. sp. Bull. Torr. Bot. Club, 29:114. Feb. 1902.

WEBSTER, Hollis. Remarks on Volvaria. Rhodora, 4:5-7. January 1902.

WEST AMERICAN FUNGI, concerning some, *see Fungi West American.* . . .

WHETZEL, H. H. Notes on Apple Rusts. [Prevalence, abundance, experiment (twig enclosed), germination of Teleutospores, galls perennial, immunity.] Proc. Ind. Acad. Sci. 1901:255-261. 1902.

WHETZEL, H. H. Notes on the Genus Stemonitis. Proc. Ind. Acad. Sci. 1901:261-6. 1902.

WHITE, V. S. The Nidulariaceae of North America. [A Monograph.] Bull. Torr. Bot. Club, 29:251-280. 5 pl. May 1902.

WHITE, V. S. Some Mt. Desert Fungi. [List, mostly higher Fungi; 8 n. sp. and vars.] Bull. Torr. Bot. Club, 29:550-563. Sept. 1902.

WILT Disease of the Cow Pea, *see Disease, Wilt.* . . .

WINSLOW, C. E. A. & Hunnewell, M. P. Streptococci characteristic of sewage and sewage-polluted waters apparently not hitherto reported in America. Science, N. S. 15:827-9. 23 May 1902.

WISTARIA in cult., host to Haplosporella wistariæ E. & B. n. sp. Jour. Mycol. 8:175. Dec. 1902.

WISTARIA frutescens, host to Phomatospora wistariæ E. & E. n. sp. Jour. Mycol. 8:68. June 1902.

WOOD, host to Granularia castanea (Ell. & Ev.) White n. sp. Bull. Torr. Bot. Club, 29:276. May 1902.

WOOD, Decaying, host to Flammula granulosa Peck n. sp. Bull. Torr. Bot. Club, 29:561. Sept. 1902.

WOOD, decaying, host to Granularia rudis. Peck n. sp. Bull. Torr. Bot. Club, 29:227. May 1902.

WOOD, decayed, matrix for Cantharellus pulchrifolius Peck n. sp. Bull. Torr. Bot. Club, 29:71. Feb. 1902.

WOOD and ground, matrix forNidula microcarpa Peck n. sp. Bull. Torr. Bot. Club, 29:272. May 1902.

WOOD, old, & Mosses, matrix for Tapesia derelicta Morgan n. sp. Jour. Mycol. 8:186. Dec. 1902.

WOOD, pine, matrix for Torula sepulta E. & B. n. sp. Jour. Mycol. 8:177. Dec. 1902.

WOOD, rotten, host to Leptonia seticeps Atkinson n. sp. Jour. Mycol. 8:116. Oct. 1902.

WOOD, rotten, in woods, host to Pluteus flavofuligineus Atkinson n. sp. Jour. Mycol. 8:117. Oct. 1902.

WOODS, Chas. D. Experiments with Fungicides on Potatoes in 1900, and How to Fight Potato Enemies. An. Rep. Me. Agr. Exp. Sta. 1901, 17:49-64. 1902.

WOODS, habitat of Cortinarius whiteae Peck n. sp. Bull. Torr. Bot. Club, 29:560. Sept. 1902.

WOODS, habitat of Eccilia rhodocylicioides Atkinson n. sp. Jour. Mycol. 8:113. Oct. 1902.

WOODS, habitat for Lepiota caloceps Atkinson n. sp. Jour. Mycol. 8:115. Oct. 1902.

WOODS, matrix (habitat) for Boletus purpureus fumosus Peck. n. var. Bull. Torr. Bot. Club, 29:554. Sept. 1902.

WOODS, Russula pulverulenta Peck n. sp. Bull. Torr. Bot. Club, 29:70. Feb. 1902.

WOODWORTH, C. W. Orange & Lemon Rot. [Pencillium digitatum.] Univ. Calif. Publications, Agr. Exp. Sta. Bull. 139:1-12. Feb. 1902.

XIMENESIA encelioides Cav., *see Verbesina encelioides Gray.*

XYLARIA californica Earle n. sp., on decayed partly buried sticks. Bull. N. Y. Bot. Garden, 2:(347). 25 Apr. 1902.

YUCCA angustifolia, host to Dothidea E. & E. Jour. Mycol. 8:19. May 1902.

YUCCA filamentosa, host to Sphaerella yuccae E. & E. n. sp. Jour. Mycol. 8:67. June 1902.

YUCCA sp., host to Dothidea yuccæ (Ell. & Ev.) Earle n. n. [Phyllachora yuccae Ell. & Ev.] Bull. N. Y. Bot. Garden, 2:(346). 25 Apr. 1902.

ZAHLBRUCKNER, Alexander. Diagnosen neuer und ungenügend beschriebener kalifornischer Flechten. Beihefte zum Bot. Centralbl. 13:149-163. 1902.

ZEPHYRANTHES sp., host to Aecidium zephyranthis Shear n. sp. Bull. Torr. Bot. Club, 29:454. July 1902.

ZIGNOELLA sabalina E. & E. n. sp., on petioles of Sabal adansonii. Jour. Mycol. 8:66. June 1902.

ZINNIA tenuiiflora, host to Puccinia zinnae Syd. n. sp. Monogr. Uredin. 1:182. 30 June 1902.

ZYTHIA rhoina E. & E. n. sp., on dead stems of Rhus radicans. Jour. Mycol. 8:13. May 1902.

NOTES FROM MYCOLOGICAL LITERATURE. IV.

W. A. KELLERMAN.

MUSHROOMS, A. M. LONGENECKER, PLANT WORLD, 5:213-218, 2 pl., November 1902, is an interesting illustrated popular account of this group of eight or nine hundred species, of which "at least 650 have been proven edible."

IN SUPPLEMENTARY NOTES ON THE ERYSIPHACEÆ, ADDENDA, Bull. Torr. Bot. Club, 29:647-9, Nov. 1902, E. S. Salmon mentions two interesting species of Uncinula from Japan, and refers again to the reported occurrence of the American Sphærotheca mors-uvæ in Belgium (an error to be expunged), and in Russia; in respect to the latter, Mr. N. A. Mossolow, of St. Petersburg, says "there is no reason to believe that the parasite could have been introduced into Russia from America."

ONE HUNDRED NINETY EIGHT NEW SPECIES, AND THREE NEW GENERA OF FUNGI, were described (according to list in index) in the Journal of Mycology, volume 8, 1902.

IN A PAMPHLET OF FIFTY PAGES, by O. Penzig et P. A. Saccardo, entitled Diagnoses Fungorum Novorum in Insula Java collectorum, Series Tertia, 1902, extracted from MALPIGHIA 1901, there are described 164 new species and varieties; and 13 new genera are estableshed.

The following mycological titles are taken from the programs of the Daily Announcement of the Washington Meeting of the American Association for the Advancement of Science, and affiliated societies, Dec. 27, 1902 to Jan. 3, 1903. Problems in the Study of Plant Rusts (illustrated), J. C. Arthur; Uredinous Infection: Suggestions and Experiments, W. A. Kellerman; A Preliminary Synopsis of the North American Species of the Genus Mitrula, E. J. Durand; The Genera of Polyporaceæ, W. A. Murrill; Cultures of Uredineæ in 1902, J. C. Arthur; Some Undescribed Structures in Synchytrium decipiens, F. L. Stevens; The Nutrition of Certain Edible Basidiomycetes (illustrated.), B. M. Duggar; Types of the Linnean Genera of Fungi, F. S. Earle; Plum Blight Caused by the Pear Blight Organism, L. R. Jones and L. P. Sprague; Systematic Relations of the Genera of the Agaricaceæ, F. S. Earle; The Bacterial Flora of the Oyster's Intestine, C. A. Fuller; Studies upon the Cytohydrolytic Enzymes produced by Soft Rot Bacteria, L. R. Jones; A Mould Pathogenic to Lobsters, F. P. Gorham; A Fat-Splitting Torula Yeast Isolated from Canned Butter, L. A. Rogers; Nitrophilic Bacteria of Soils, F. D. Chester; Rhizobia in Economic Agriculture, Albert Schneider; Increasing the Virulence of the Tubercle Forming Bacteria in the Leguminosæ, George T. Moore; The

Relative Viability of B. coli and B. typhosus under Certain Conditions, Stephen De M. Gage; and Further Evidence of the Apperent Identity of B. coli and Certain Lactic Acid Bacilli, S. C. Prescott.

MYCOLOGICAL NOTES, NOS. 11 AND 12, were issued by C. G. Lloyd, December 1902, and generously distributed to mycologists. The notes are numbered 191-199 in No. 11, and 200-213 in No. 12. As usual these are neatly gotten up, very interesting and extensively illustrated. Full page, consecutively numbered separate plates now accompany the Myc. Notes. In No. 11 the notes are miscellaneous (two by Dr. Farlow), a new form of the Geaster saccatus is recognized; No. 12 is devoted to the Bovistæ — the species of Bovista and Mycenastrum; a new form of M. arium is recognized; the genus Catastoma will appear in the next issue.

UREDINEÆ NOVÆ, J. T. LINDROTH [of which 6 are North American], and eine arktisch-alpine Rhabdospora [an exhaustive study of R. cercosperma], are printed in Meddelanden från Stockholms Högskolas Botaniska Institut, Band IV, 1901.

PROFESSOR F. S. EARLE'S KEY to the North American species of Cortinarius is continued in Torreya, 2:180-3, Dec. 1902.

DR. ALEXANDER ZAHLBRUCKNER GIVES THE LATIN DIAGNOSES of one new genus (Hassea), 17 new species, and 2 new varieties of Lichens, under the title Diagnosen neuer und ungenügend beschriebener kalifornischer Flechten, in Beihefte zum Botanischen Centralblatt, 13:149-163. 1902.

IN THE PROCEEDINGS OF THE INDIANA ACADEMY OF SCIENCE 1901, (Published in 1902), Mycologic articles are as follows:— Notes on Apple Rusts (H. H. Whetzel); Notes on the Genus Stemonitis (H. H. Whetzel); The Germinative Power of the Conidia of Aspergillus oryzae (Mary F. Hiller); Spore Resistance of Loose Smut of Wheat to Formalin and Hot Water (William Stuart); Some Additions to the flora of Indiana — Plant Rusts (William Stuart); and A Collection of Myxomycetes (Fred Mutchler).

AN EXTENDED STUDY OF TWO FUNGOUS DISEASES OF THE WHITE CEDAR (Cupressus thyoides), namely Gymnosporangium biseptatum and G. ellisii, is given in the May No. of the Proceedings of the Academy of Natural Sciences of Philadelphia, pp. 461-504, plates XXII and XXIII, 1902. The belief is expressed that the fungi cause marked metabolic changes in the stem of the host, accompanied by the accumulation of resins and other substances, products of increased cell activity. A full and conveniently arranged tabulation of the characters, hosts and distribution is given of the several species of the genus Gymnosporangium.

THE INTERESTING AND VALUABLE REPORT OF THE STATE BOTANIST 1901, Charles H. Peck, has been published as New York State Museum Bulletin 54 (Botany 5) and includes pp. 931-984, plates K & L, and 77-81, November 1902. New species, 16 in number, and new varieties, 7 in number, are described. Another commendable feature is the full technical and popular descriptions of 11 species of Edible Fungi. These are illustrated in natural color on 2-page plates. Copies of this Report are offered for sale at 40 cents. Address Director N. Y. State Museum, Albany.

P. & H. SYDOW, IN FASCICULUS I, VOLUMEN I, MONOGRAPHIA UREDINEARUM (pp. 1-192) give the diagnoses of 302 species of Puccinia (298 on Compositæ and 4 on Calyceraceæ), of which 63 are described as new. Of the new species 13 belong to North America.

UNDER THE TITLE OF EINIGE PILZFUNDE aus der Umgegend von Berlin, in Verhandlungen des Botanischen Vereins der Provinz Brandenburg, 1901, 43:105-6, 1902, W. Ruhland after describing two new species of fungi, reports the occurrence of Peck's American Massaspora cicadina on a cicada collected in Bredower Forst the preceeding year.

PROFESSOR BESSEY NOTES THE DISEASE of potatoes that causes the fibro-vascular bundles to turn brown (Science N. S. 15:274, 14 Feb. 1902), and under his direction experiments were conducted by Mr. J. A. Warren, who showed the disease to be due to Stysanus stemonites (Pers.) Corda. This is the first record of this fungus in this country and the first report of its connection with the Brown Disease of Potatoes.

A SUMMARY of what is known in regard to the most serious diseases of the sugar beet is given by C. O. Townsend in Report No. 72, U. S. Dept. Agr., Progress of the Beet-Sugar Industry in the United States in 1901. The items are Damping Off, Curly top or blight, Leaf spot, Leaf scorch, Beet scab, Brown rot or Rhizoctonia rot, and Root gall.

IN A BOOK OF 323 PAGES recently issued (1902) by the Calumet Publishing Co., Pittsburg, Pa., entitled Powdered Vegetable Drugs, the author (Albert Schneider) briefly descusses [3 pages] Bacteria and Hyphal Fungi as causes modifying the characteristics of Vegetable Powders.

MINNIE REED IS THE AUTHOR OF A PAPER entitled Two New Ascomycetous Fungi parasitic on Marine Algæ, University of California Publications, Botany, 1:141-164, pls. 15-16, 20 Nov. 1902. The species described, studied and figured are Guignardia ulvæ and G. alaskana. But few cases have been reported of the association of fungi with marine algæ either in a symbiotic or a

strictly parasitic relation. While by no positive statement maintained, it is nevertheless remarked that "perhaps instead of being a symbiotic relation, where each is benefitted, it may be a case of extreme relation, where the ascomycete is the aggressor and receives all the benefit at the expense of the alga."

STEREUM QUERCINUM, A NEW SPECIES, is according to M. C. Potter (Trans. Eng. Arboricult. Soc. 1901-2) the cause of Canker of Oak trees, common in the north of England.

A GOOD BRIEF OUTLINE OF THE INVESTIGATIONS (published in Bul. Min. Agr. France) ON A NEW BACTERIAL DISEASE OF THE POTATO by G. Delacroix, is given in the Experiment Station Record, 14:365, Dec. 1902. The disease is due to Bacillus solanicola and it attacks the tomato as well. The characters of the disease are described. The conditions for infection seem to be a humid Spring which is late and cold followed suddenly by very hot, dry weather.

BEITRAG ZUR KENTNISS DER ROSTPILZE, Centralblatt f. Bakt. Par. u. Infektionskr. Zweite Abt. 9:796-804, 841-4, 6 u. 15 Dez. 1902, Ernst Jacky, includes inoculation experiments with Puccinia bardanæ; P. cirsii-lanceolati Schroet. und P. cirsii-eriophori Jacky; P. violæ (Schum.) DC.; P. helianthi Schw.; and P. prenanthis (Pers.) Lindr. Especially to be mentioned is this here first experimentally demonstrated fact that the Violet Rust is an aut-eu-puccinia; the author also shows that P. helianthi is an aut-eu-puccinia — the pycnidia, æcidia, uredo, and teleutospores produced (by sowings of teleutospores from Helianthus annuus) on H. annuus, H. cucumerifolius, and H. californicus, but the species not able to live on H. tuberosus, H. maximiliani, H. multiflorus, H. scaberrimus, and H. rigidus.

THE MYCOLOGICAL ARTICLES IN HEDWIGIA, Band XLI, Heft 6, 1902, are as follows: Fungi S. Paulenses II. a cl. Puttemans collecti, von P. Hennings; Battareopsis Artini n. gen., sowie andere von Professor Dr. G. Schweinfurth in Aegypten 1901-1902 gesammelte Pilze, von P. Hennings; Sceptromyces Opizi Corda (Botrytis sceptrum Corda) ist eine Conidienform von Aspergillus niger Rob., von C. Engelke; Neue Beobachtungen über die Vegetations-Formen des Mutterkornpilzes Claviceps purpurea Tulasne, von C. Engelke; Ueber den Artenbegriff von Uredo bistortarum DC. in Flore Française Vol. VI S. 76, von P. Magnus; and Ueber die richtige Benennung der Hyalospora Aspidiotus (Peck) P. Mag., von P. Magnus.

UEBER VENTURIA CRATAEGI N. SPEC., R. ADERHOLD, is an illustrated article, published in Berichte der Deutschen Botanischen Gesellschaft, 20:195-200, pl. 9, 23 Apr. 1902. As a synonym, is mentioned Venturia chlorospora (Ces.) Karst. p. parte. The conidial form is Fusicladium cratægi Adrh. n. sp.

The host is Cratægus oxycantha: Leaves exposed through the Winter for the perithecia; and fruit in Fall and Spring, perhaps also in Summer.

DESCRIPTIONS OF AMERICAN UREDINEÆ, IV, by J. C. Arthur and E. W. D. Holway, Bull. Lab. Nat. Hist. State Univ. Iowa, 5:311-334, pl. 1-9, Oct. 1902, apply to American plant-rusts inhabiting species of Gramineæ belonging to the sections of Agrostideæ and Chlorideæ, with their accompanying aecidia so far as known. Sixteen species are included, Puccinia muhlenbergiæ being new. Only one of the species has had its full cycle of development traced, namely Puccinia fraxinata (Lk.) Arthur of which Aecidium fraxini Schw. is the alternate form. The original diagnoses, also new and very full description and critical notes, as well as illustrations are given, as in previous numbers of this series. The article is based on the material in the authors' Uredineæ Exsiccatæ et Icones.

IN BEIBLATT ZUR HEDWIGIA, 41:(169), (177), (179), Sept. — Okt. 1902, (Heft 5.) we find the following mycological titles: Eine neue norddeutsche Phalloidee (Anthurus borealis Burt var. n. Klitzingii P. Henn.), von P. Hennings; Einige Uredineen aus Japan, von P. Dietel; Die Befruchtung von Albugo Lepigoni und einigen Peronosporeen, von W. Ruhland.

ARTICLES RELATING TO FUNGI in Hedwigia, Heft 4, 1902 (p. 164, & 167) are Einige neue deutsche Pezizaceen, von P. Hennings; Eeinige neue Cordiceps — Arten aus Surinam, von P. Hennings. In the Beiblatt to the same are, (p. 145) Bemerkungen zu Dietel's Ausführung über die Gattung Uropyxis, von P. Magnus; and (p. 146) Phlebia Kriegeriana P. Henn. n. sp., von P. Hennings.

COLLECTING AND PRESERVING FUNGI, UREDINEÆ, is briefly treated by E. W. D. Holway in Jour. Appl. Micr. & Lab. Meth. 5:2075-6. 1902. It is suggested that a portfolio with many thin sheets and but few dryers be used — though a botanical box is convenient in the wind or where very large quantity is to be taken. Leaves of grasses and sedges to be cut in 4 inch pieces; some ligules and inflorescences should be collected; search specially for the uredo stage also; collect æcidia when not too old, use but little pressure in drying them. Determine hosts accurately. Arrange the specimens in a large herbarium according to the host plant, putting different genera on different sheets. Have a set of mounted slides — Dr. Arthur's method, i. e. spores mounted dry, the cover glass fastened with a narrow strip of gummed paper.

FRANK LINCOLN STEVENS IN STUDIES IN THE FERTILIZATION OF PHYCOMYCETES, Bot. Gaz. 34:420-5, Dec. 1902, says that "the general bearing of the cytological evidence on the re-

lationship of Sclerospora is to emphasize its affinity to the Peronosporaceæ rather than to the Albuginaceæ, and to indicate its specialized rather than primitive character. Sclerospora, as shown by the combined evidence of the double investment of its oospore, the character of its conidiophores, and its cytology, probably separated early from the main line of the Peronosporaceæ, at a time much later than the divergence of the Albuginaceæ from the Peronosporaceæ.

Uredineæ Exsiccatæ et Icones, Fascicle iv, J. C. Arthur and E. W. D. Holway, Dec. 1902, contains 49 packets, with a like number of photo-engraved drawings and heliotype reproductions from photographs, representing 15 species. It is needless to commend this admirable and to every student of Uredineæ indispensable set of specimens. The photographs (heliotype reproductions) have heretofore been unequalled. The signs the authors use here and elsewhere are, O for spermatia, I for æcidiospores, II for uredospores, III for teleutospores, and X for amphispores; the same printed in small type indicate few sori or the spores scattered among other spores.

A monograph of the (7) North American species of Ganoderma, by William Alphonso Murrill, is given in the Bull. Torr. Bot. Club, 29:599-608, October 1902. It is the "lucidus" group of Polyporus; the genus Ganoderma being established by Karsten in 1881, based upon the laccate character of pileus and stipe. The range was extended in 1887 by Patouillard to include all forms of Polyporaceæ with colored spores, adhering tubes and shining crusted pilei. Mr. Murrill describes as new five of the seven species included in the monograph.

Cephalothecium roseum has proved to be a true parasite and the cause of an apple rot of great economic importance, according to H. J. Eustace, Science, N. S. 16:747-8, Nov. 7, 1902. In some sections thousands of barrels of apples have been ruined by it. Fusicladium dendriticum, unusually common, ruptures the epidermis and thus furnishes a means of entrance for the Cephalothecium.

The Mycological articles in the 3e Fascicule, Tome 18, Bulletin de la Société de France, 15 Août 1902, are Observations sur quelques-unes des principales espèces d'Amanites (Boudier); Sur deux Maladies du Vanillier — sur les formes primaires du Calospora vanillæ; Uromyces joffrini nov. sp. (Delacroix); Sur le mode de Développement du Champignon du "Noir des Bananes" — Gloeosporium musarum (Delacroix); Necessité de la presence d'une bacterie pour obtenir la culture de certains Myxomycetes (Pinoy).

AN INDEX BIBLIOGRAPHIQUE DES PRINCIPAUX MÉMOIRES de Mycologie in 1901 is given in the Bulletin de la Société Mycologique de France, 18:217-226. 1902.

SOME IMPORTANT MYCOLOGICAL ARTICLES published in 1902 in the Berichte der Deutschen Botanischen Gesellschaft are: Walter Busse, Ueber den Rost der Sorghum-Hirse in Deutsch-Ostafrika; P. Magnus, Ueber die in den knolligen Wurzelauswüchsen der Luzerne lebende Urophlyctis; P. Magnus, Ueber ein function der Paraphysen von Uredolagern, nebst einem Beitrage zur Kentniss der Gattung Coleosporium.

AN INSTRUCTIVE DISCUSSION, by F. C. Harrison and M. Cumming, of the Bacterial Flora of Freshly Draw Milk, is published in the Journal of Applied Microscopy and Laboratory Methods, 5:2029-2038, Nov. 1902. The work done to date is reviewed and full notes are given on the several species, one being hitherto undescribed.

THE THIRD ARTICLE IN THE SERIES of The Bacterial Flora of Freshly Drawn Milk, by F. C. Harrison and M. Cumming, is printed in Jour. Appl. Micr. & Lab. Meth. 6:2130—1, Jan. 1903. But little more than half a dozen species were obtained (3 cows). The authors refer to the fact of the germicidal properties of freshly drawn milk, allied to the similar bactericidal property of blood: it must also exist in milk in the udder and may inhibit or prevent the rapid multiplication of adventitious bacteria.

THE INSTRUCTIVE AND INTERESTING PRESIDENTIAL ADDRESS by J. C. Arthur. before the Botanical Society of America at Washington, Jan. 1, 1903, is published in the Bulletin of the Torrey Botanical Club (30:1—18. Jan. 1903). The development of our knowledge of the Uredineæ is traced, the culture work done first by DeBary then Oersted noticed, the experiments in this country by Farlow, Thaxter and Halsted mentioned, the extensive and valuable labors of Eriksson of Stockholm and Klebahn of Hamburg emphasized and the numerous problems confronting the culturist traced with competent grasp. All mycologists will be profited in reading the address. Those who study or even collect Uredineæ ought to heed these statements: "No rust can be considered apart from its host; the parasitism is so closely wrapped up in the evolution of the species that to ignore it would be folly. Many collections of Uredineæ are rendered nearly worthless for study because the collector neglected to determine the host, or to include material in the collection by which the student could determine it."

THE EFFECT OF BLACK ROT ON TURNIPS is the title of Bulletin 29, Bureau of Plant Industry, U. S. Dept. Agr., author

Erwin F. Smith, issued Jan. 17, 1903. It is a series of photomicrographs, accompanied by an explanatory text. The 13 admirable plates are reproduced by the Heliotype Co., of Boston. It is claimed that the Bacterium (Pseudomonas campestris) is capable not only of destroying the middle lamellæ, but also of slowly dissolving the cell wall proper.

THE BACTERIA OF THE SOIL IN THEIR RELATION TO AGRICULTURE, by Frederick D. Chester, is set forth in extenso in Bulletin No. 98, Dept. Agr. Commonwealth of Pennsylvania, 1902. Such topics as soils, their value and origin; number and distribution of soil bacteria; chemical changes produced by bacteria in the soil; the elaboration of plant food; assimilation of atmospheric nitrogen; and related matters indicate a valuable and useful treatise, full and up to date, covering 88 pages, concluding with a bibliography of 105 titles.

DOTT. G. SCALIA HAS PUBLISHED IN AGRICULTORE CALABRO-SICULO, XXVII, Nr. 24, an article, Di Una Nuovo Malattia dell' Asclepias curassavica Spr., in which is proposed the new genus, Oidiopsis, "ab *Oospora* hyphis distinctis differt; *Oidio* omnino simillima sed endophyta."

DR. VON SCHRENK REPORTED TO THE ACADEMY OF SCIENCE OF ST. LOUIS January 5, 1903 [Science, N. S. 17:188, 30 Jan. 1903,] that Perley Spaulding had found two weeks earlier perfectly formed asci and ascospores of the Bitter-rot fungus (Gloeosporium fructigenum Berk.) in the cankers induced on apple limbs by inoculation — thus demonstrating for the first time and beyond question, that the fungus produces its perfect fruit in the cankers. Since the asci are evenascent "it is not at all improbable that many of the supposed pycnidial spores found in both the natural and artificially produced cankers were really ascospores."

IN AN ARTICLE IN TORREYA (3:6—7, Jan. 1903,) entitled Vacation Observations.— III, Francis E. Lloyd mentions a case of large patches of the moss Polytrichum commune being killed by a fungus — probably a Mucor-like organism; also that the death of the capsules with some amount of distortion of Dicranum scoparium and Polytrichum ohioense was induced by a myxomycete. He found that Hypomyces lactifluorum, parasitic on Lactarius, is able to propel its spores 1½ inches or more.

THE MOBILITY OF RHIZOBIUM MUTABILE IS CONSIDERED by Albert Schneider in Contributions to the Biology of Rhizobia, Bot. Gaz. 35:56—8. Jan. 1903. Some of the conclusions are: the species is non-motile in most neutral media, especially in solid neutral media; it is decidedly motile in acid media, whether these media are liquid or solid; motile Rhizobia are smaller, and more uniform in size and form.

ASPERGILLUS NIGER AND PENICILLUM GLAUCUM were used by Arthur L. Dean in Experimental Studies on Inulase, Bot. Gaz. 35:24—35. Jan. 1903. The inulase of these fungi does not pass into the culture medium; it is therefore an endo-enzyme. It acts most vigorously in a medium containing 0.0001 normal acid (H_2SO_4). Alkalies hinder the activity of inulase.

CLEAR AND USEFUL SUGGESTIONS ON CULTURE METHODS WITH UREDINEÆ are given by Mark Alfred Carleton in Jour. Appl. Micr. & Lab. Meth. 6:2109—2114, Jan. 1903. These are arranged under the following topics: Methods of Germination; Selection of Materials; Methods of Inoculation; and Suggestive Studies.

ERRATA.

Some unfortunate errors are found in Prof. Morgan's article in the last No. (vol. 8, 1902) and changes should be made as follows, suggested by the author: Paragraph No. 3 (p. 179) change 1834 to 1885; No. 55 (p. 184) erase the last line "Peziza æruginascens, etc."; No. 59 (p. 185) erase the second line, substitute Lachnea aurelia Gillet, Disc. Fr. 1879; No. 60, erase the second line, Substitute Belonidium auratum Saccardo, Mich. I. 1877; No. 85 (p. 188) in fourth line change "algida" to albida; No. 88, "Martins" should be Martius and "stenostorna" should be stenostoma; No. 94 (p. 189) in second line change "2-3" to $\frac{2}{3}$. In seventh line change "8-8" to 8-9.

On page 15 (same vol.) "Puccininia" should be Puccinia; p. 76, the line beginning "Lycopodium" should be stricken out; p. 97, "Tolysporium" should be changed to Tolyposporium, and "Tracy Syd." etc., changed to Tracya Syd. etc.; p. 117, "Polyporis" should be changed to Polyporus; p. 125, "E. V. Wilcox" should be E. N. Wilcox; p. 231, "Granularia rudii" should be Granularia rudis; and p. 239, change *"Corprineae"* and *"Corprinus"* to *Coprineae,* etc.

JOURNAL OF MYCOLOGY

A Periodical Devoted to North American Mycology. Issued in February, May, October and December. Price, $1.00 per Year. To Foreign Subscribers $1.10. Edited and Published by

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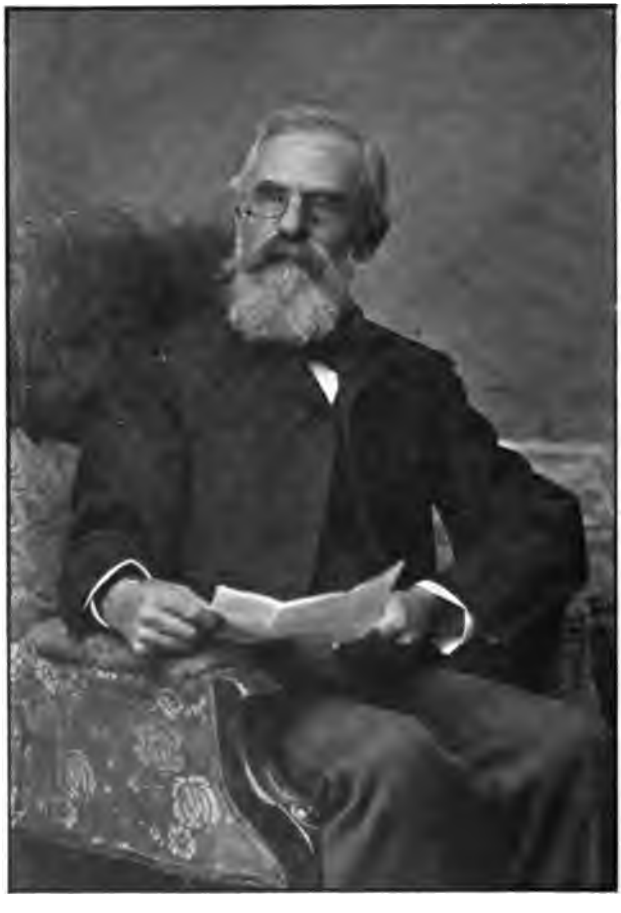
NOTES.

It is much to be regretted that in spite of the fact that the Nos. of the Journal of Mycology have been enlarged from 48 pp. to 80 pp. it is yet necessary that important papers generously offered by mycologists have to be postponed or declined. Apology to contributors is offered — but something else will have to be done; see below.

Thanks are extended to Mr. P. L. Ricker and Rev. J. M. Bates for corrections (additions) to the Index to North American Mycology. It is earnestly hoped that all authors will kindly notify me in case ommissions or inaccuracies are observed by the authors of articles or others.

The intention to issue yearly about two *Reprints* of the Index to North American Mycology, *printed on one side of the page* for convenient use in making a card index, etc., does not prove to be adequate in the case — since a fuller index (more cross-references, etc.) results in a bulkier contribution. Besides, it is desirable to keep the Index abreast with the rapidly growing mycological literature. Therefore about three or more *Reprints* will be made each year; but subscribers are not expected to forward payment until 4 Reprints (at 25cts. each) are issued, yet credit will be entered whenever payments in whatever amounts are kindly forwarded.

It may as well be stated at once that the Journal of Mycology will be enlarged next year and perhaps issued bi-monthly. As the basis of the present price was about 48 pp. per No., the enlargement next year will call for a rate of $2.00 per volume. But the enlargement can not altogether be postponed till next year, and therefore immediately *after the issue of the December No.* 1903, the price of the present volume, and also of the preceding one will be $2.00.



Yours very truly.
S. M. Tracy.

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ON A RUST OF THE CULTIVATED SNAPDRAGON.

BY W. C. BLASDALE.

During the summer of 1895 the writer found near San Leandro, California, the uredo stage of a rust growing on cultivated forms of Antirrhinum majus. Somewhat later the same rust appeared on some plants of the same host growing in my own garden at Berkeley. Both uredo and teleuto stages were produced and the fungus ultimately destroyed the entire group of plants. Specimens were submitted to Mr. E. W. D. Holway and to Dr. Dietel, and the species was published (Hedwigia, 36:298, 1899), by them under the name of *Puccinia Antirrhini*. Since that year the fungus has appeared every season in which an attempt was made to raise this annual, and in every case destroyed the plants shortly after they had reached the flowering stage. Further observations have shown that the disease is a common one in the region about San Francisco Bay, though I have no knowledge of its occurring elsewhere in the State. Since there is no record of a similar disease in other parts of the world, the question at once arises as to where it originated, since the period of time during which the snapdragon has been cultivated in California is comparatively limited. Thus far only four species of rusts which inhabit scrophulariaceous genera have been found in the State. These are Puccinia wulfeniæ D. & H. on Wulfenia cordata, P.

rufescens D. & H. on Pedicularis semibarbata, Aecidium collinsiæ Ell. & Ev. on Collinsia bicolor and an Aecidium (species as yet undertermined) on Pentstemon confertus. The two species of Puccinia present decidedly different characters from those of the species to which the snapdragon disease is due and it is very improbable that the latter is correlated with either of the two Aecidia. The first mentioned species has been found but once in the Bay Region and then in very small amounts, the latter is known only from the Sierra Nevada Mountains. Further than this, badly infected snapdragon plants have been placed in close proximity to patches of various species of Collinsia, growing in the Botanic Garden of the University of California, for two seasons but the Aecidium has never appeared. Attempts to infect various other species of scrophulariaceous genera with the disease have been successful in three instances only. During the past season it was found that plants of the native Antirrhinum vagans, grown from seed, were attacked with nearly the same degree of destructiveness as the cultivated species. Also plants of Linaria reticulata and L. amethystina were attacked by the disease, but to a much less degree than the other species. No differences could be detected in the characters of the fungus grown on the four different host plants. Presumably then the snapdragon rust originated on the wild form of Antirrhinum but thus far the disease has never been found on plants growing spontaneously though diligent search has been made for it whenever the opportunity was offered. The only alternative is to assume that it is a case of adaption of a species from a host plant belenging to a different order. The destructive character of the disease would render it wise to guard against introducing it into other regions.

A NEW SPECIES OF SIROTHECIUM.

A. P. MORGAN.

In the Symbolae ad Mycologiam XX, p. 105, 1887, Karsten founded a new genus Sirothecium upon a single species, see Saccardo, Sylloge X, p. 270. This genus is more than merely a "phæosporous Sirococcus;" it is probably more closely related to certain species of Hormococcus or Trullula. The following species rests well in Karsten's new genus.

SIROTHECIUM NIGRUM Morgan sp. nov.—Perithecia superficial, gregarious, subglobose, astomous, glabrous, black; the wall thin and fragile, dehiscing irregularly; the enclosed mass of spores brown. The hyphae wholly abjointed into long slender,

branched chains of spores, which readily fall apart. Spores cylindric, obtuse at both ends, smoky-pellucid, 5-6x2.5 mic.

Growing on wood and bark of Acer, under the bark; Preston, Ohio. The perithecia 100-150 mic. in diameter, loosely attached to the matrix, scattered or often closely crowded.

A SERIES OF SPECIMENS ILLUSTRATING NORTH AMERICAN USTILAGINEAE.

A. B. SEYMOUR.

In 1884, under the direction and encouragement of Professor T. J. Burrill, I prepared a systematic account of the Ustilagineae of Illinois, based chiefly on my collections of 1881 and 1882 and intended to be co-ordinate with the "Illinois Uredineae." But no botanical publications in this series were issued for many years and this manuscript with others remained untouched. Finally Mr. G. P. Clinton took up the study of the group, and with Professor Burrill's approval I consigned my interests to the former.

In nearly twenty years that have elapsed Mr. Clinton has been able to double the list of Illinois species. In addition to his years of study and his economic writings on the group in Illinois, he has recently spent two years at Harvard, where he has completed an exhaustive monograph of the North American species. His preliminary account was published in the Journal of Mycology for October, 1902.

The series of specimens to which reference is here made, was published under date of January 1, 1903, to illustrate Dr. Clinton's monograph. The specimens are those accumulated by both of us through our own collecting and by exchanges. They have all been verified and put in envelopes by Dr. Clinton. Fifteen other botanists have contributed specimens.

Of the 100 numbers, 63 are from Illinois, 19 from Massachusetts. Maine, New York and Mississippi each supply two. Jamaica and eleven states contribute one each.

Dr. Clinton's paper records 181 species and varieties with numerous hosts and localities. This fascicle of specimens contains 66 species and varieties representing 100 hosts or localities. Evidently much remains to be done in a future fascicle.

All botanists are invited to contribute additional material for distribution.

The main series of specimens entitled Economic Fungi is planned to illustrate plant diseases from a practical standpoint. One hundred copies are prepared and nearly every imoprtant

College and Experiment Station is a subscriber. Botanists have supported it generously, sending valuable specimens illustrating new practical results.

The supplements are intended to be scientific regardless of practical bearings. Fifty copies are prepared. Three supplements have been issued: A.—Phycomycetes; B.—Uredineae; C.—Ustilagineae.

It is desired to add to each of these and to prepare others. Much material is already in hand; more is desired. Botanists are especially requested to co-operate in the preparation of sets to illustrate their special studies as Dr. Clinton has done.

DICTYOSTELIEAE OR ACRASIEAE.

A. P. MORGAN.

Mr. Edgar W. Olive in the Cryptogamic Laboratory of Harvard University, has been studying the Acrasieæ. He has kept various members of this group of organisms in cultivation and under observation for five or six years. The results are embodied in a pamphlet of sixty pages or more, which is an admirable example of careful and critical work.

The order Acrasieæ is represented by a small group of mostly coprophilous organisms, comprising seven genera and twenty species. Knowledge of them began with the discoveries of Brefeld, Cienkowsky and Van Tieghem.

By Mr. Olive the number of species previously recorded has been nearly doubled and what is of more importance the life-histories of the species observed by him have been patiently followed out and their relation to kindred organisms clearly established.

The life-cycle of the Acrasieæ is separable into two well marked periods, one of vegetation and one of fructification. In germination the protoplasm of each spore issues forth and passes its vegetative stage as an amoeba; it absorbs nutriment, increases in size and becomes greatly multiplied by successive divisions. After a more or less prolonged independent existence as vegetating individuals the amoebæ congregate toward certain centers and form aggregations for the purpose of fructification. These colonies or *syncitia* develop into fructifications which show increasing complexity of structure from the slightly differentiated sessile aggregations of the simpler species to the complex stalked sori of those most highly developed. In the stalked forms the scramble for place and position among the amoebæ is something remarkable; for those forced to the center and com-

pelled to take their places as rounds in the ladder, there does not appear to be any further use; only upon the most exalted individuals is there conferred immortality. The ultimate purpose is the production of naked masses of resting bodies, the *spores;* these spores in some of the species are naked protoplasts, in others they are regularly invested with a cell-wall. The varying details in the development of the fructifications furnish the characteristic differences for the genera and species.

Mr. Olive's studies make it clear that there is neither homology nor analogy between the *plasmodium* of the Myxomycetes and the *syncitium* of the Acrasieæ. The plasmodium is a complex protoplast, the cytoplasm of the individual amœbæ fusing completely. The syncitium is a compound protoplast, an aggregation of individual protoplasts; at any stage in its development the colony may be separated into its component members. In the one there is continuous nuclear division, in the other no nuclear changes have been observed. Furthermore, the plasmodium is the final vegetative condition, while the syncitium is the initial fructifying stage.

In SAPPINIA the resting stage consists either of a single encysted individual or of many individuals encysted in masses at the ends of projections of the substratum. It may be regarded as a transitional form from the true Amoebæ. There are two species.

In GUTTULINOPSIS the spore-clusters or *sori* are usually stalked and composed of spores that have no cell-wall. This genus is represented by three species.

GUTTULINA differs from Guttulinopsis in that the spores have a definitive protective cell-wall. It contains four species.

The genus ACRASIS is quite abnormal. It is defined as a chain of spores terminating a simple stalk. The spores in the single species are globose, the surface roughened and of a deep violet color; they are 10-15 mic. in diameter, much larger than in other species of the order. Its habitat is quite different too, on the sediment of beer. We much regret that Mr. Olive was unable to find this singular organism.

DICTYOSTELIUM is the principal genus both in the character of its development and in the number of its species. It has tall stalked sori sometimes more than a centimeter in height; the spores are invested with a cell-wall. There are seven species, two or three of them quite common.

POLYSPHONDYLIUM is a branched form of Dictyostelium. It is possible that the distinction is not great enough to warrant the retention of the two as distinct genera. There are three species.

In COENONIA the sorus is globular, borne at the summit of a stalk, which is dilated into a sort of cupule, in which the sorus is supported. One species.

Four of these genera and thirteen species occur in this country and have been cultivated by Mr. Olive.

For the method of work and detail of observations, the reader must seek the splendid essay. The interest of it is all lost in such a bare outline as we must necessarily give; hence any dissent from the original must be taken as mere suggestion and any fault-finding as extremely superficial.

On page 493, first line *Arcyriaceae* is probably intended instead of *Physaraceae.* The species of Arcyria and also some species of Hemiarcyria fulfill the conditions mentioned.

The physiological phenomena are as a general thing presented cautiously; we are, however, rather disposed to cavil at the statement on page 489, and elsewhere that "the individuals during the fructifying period *probably in response to some chemotropic stimulus,* unite to form colonies." Every physiological process is dependent upon both internal and external factors; the specific shape and nature of an organism are inherited properties; from an acorn nothing but an Oak can develop. See Pfeffer.

Our dislike of the *pseudo* prefix is apparent. We may have to tolerate the venerable *pseudopodium,* but not the rest. This evasive prefix is, however, in common use and its employment by Mr. Olive is not original. The term *syncitium,* we are aware, has been otherwise made use of, but its application both by Vines and Verworn, for example, seems to us superfluous; it is eminently applicable to the assembling amoebæ of the Acrasieæ.

Finally, where shall we place these organisms? In their active assimilating and reproductive stage, they are simple Amoebæ. It would be interesting to know how they come to their peculiar habitat; did they survive in the drinking water or did they crawl out upon the land, catching at straws by the way? In view of this habitat their appearance in their present shape cannot be extremely ancient. The Sporozoa are not near akin to them. Their relation to the Amoebidæ is closer than is that of the Myxomycetes. The fact is, both are short divergent members from the advancing animal line.

The Vegetable Kingdom is not in line with any of the Protozoa. It is safe to claim that the bacterial cell is the lowest cell-form that can without question be called a plant; from this all other vegetation has been derived. The systematic succession between plant and animal does not seem to us so well established, as some would have us think; there is much confusion in this respect, among the lower organisms. As having a bearing upon this subject, we can here only refer to Thaxter's Myxobacteriaceæ.

A HISTORICAL REVIEW OF THE GENERA OF THE POLYPORACEAE.*

BY WILLIAM ALPHONSO MURRILL.

It is not my intention to lengthen the present paper with a formal introduction. The subject of "generic types" is not unknown to American botanists and the historical method here adopted leaves little to be explained. The principles by which I have been chiefly guided are also quite well known, having been stated and explained by Underwood in "A Review of the Genera of Ferns proposed prior to 1832" (Mem. Torrey Club, 6:250). and restated by Banker in "A Historical Review of the proposed Genera of the Hydnaceæ," which appeared in the July number of the current volume of the Torrey Bulletin. After a brief statement regarding the establishment of each genus in its chronological order, an alphabetical summary will be made in which available generic names will be distinguished from those which for any reason are considered untenable. In order to make the species names better understood in cases where an early name is restored, the name assigned to the given species by Saccardo in his Sylloge is placed in parenthesis after the earlier name.

1. AGARICUS (Dill.) L. Sp. Pl. 1176. 1753. — Based on A. quercinus L. Fl. Suec. 380. n. 1082, 1745, where this species is directly referred to Dillenius' genus Agaricus. Since Linnæus states that he adopted the genus Agaricus from Dillenius and this species is the only one directly cited by Linnæus as belonging to the genius, it must stand as its type.

2. CERIOMYCES Batarr. Fung. Hist. 62. Pl. 29. f. A. B. 1755. — Founded upon one species of Polyporus and several species of Boletus as these terms are used in Saccardo. The first binomial species listed is C. crassus Batarr., which must be considered the type of the genus, thus placing Ceriomyces among the Boletaceæ.

3. KORDERA Adans. Fam. 2:10. 1763. — Based on Vaill. Bot. Par. pl. 8. f. 1. 1727. The species here figured is not binomial and not definitely determinable.

4. MISON (Grae.) Adans. Fam. des Pl. 2:10. 1763. — Founded on Agaricum Mich. t. 62, 63 and briefly described. These two plates being very different and being so recognized by Micheli (Nov. Pl. Gen. 121. 1729), who represents on them two different sections of Agaricum, the name Mison properly belongs with the first which is Polyporus igniarius (L.) Fr. The genus name, however, cannot hold because the name of its type species as cited was not binomial.

* Read before the Botanical Society of America at Washington, December, 1902.

5. AGARICON Adans. Fam. 2:10. 1763.—Founded on Tournefort's pl. 330 and Micheli's pl. 60, the first of which represents P. igniarius (L) Fr. The genus is, however, not established upon a binomial and moreover the name is preoccupied by Agaricus L.

6. PORIA (Brown) Adans. Fam. 2:10. 1763. — Based on Mich. Pl. 61. f. 2. 1729, a polynomial and as yet undetermined species. Hill used Poria for one of the large punk fungi in his Nat. Hist. 2:40, 1751 and he also had a genus Porium (l. c. p. 28) which seems synonymous with Boletus. In none of these cases is the genus properly established.

7. POLYPORUS (Mich.) Adans. Fam. 2:10. 1763. — Based on P. leptocephalus (Jacq.), which stands first in Micheli's list of species under his new genus Polyporus in Nov. Pl. Gen. 129. 1729. When Adanson restored the name he referred to five of Micheli's figures representing central-stemmed plants, all of which were congeneric, one being P. leptocephalus (Jacq.). The genus was thus restored by Adanson in its original sense, but does not hold because not founded on a binomial species.

8. STRIGLIA Adans. Fam. 2:10. 1763.—Founded on Batarra's Pl. 38, which represents several common species of Agaricus, the first being A. quercinus L. The genus is thus synonymous with Agaricus, even if considered properly established without a binomial basis.

9. SESIA Adans. Fam. 2:10. 1763. — Founded on S. hirsutum (Schaeff.) [L. sæpiaria (Fr.)] figured in two positions by Vaillant in Bot. Par. pl. 1. fig. 1-2. 1727. The specimens were collected on the timbers of a boat at St. Cloud. The drawing is well done and leaves no doubt as to the identity of the plant. The lack of a binomial, however, prevents the proper establishment of the genus.

10. SERDA Adans. Fam. 2:11. 1763. — Founded on Vaill. Bot. Par. pl. 1. fig. 3. 1727. This figure is not so clear as the first two but it very closely resembles an old resupinate form of Sesia hirsutum (Schaeff.) [L. sæpiaria (Fr.)]. Add to this the fact that the plant was collected at the same time on the same host and I think one is justified in regarding Serda as a synonym of Sesia, the two being separated by Adanson because one was resupinate and the other was not.

11. CELLULARIA Bull. Herb. France. 9. pl. 414. 1788.—Based on C. cyathiformis Bull., a single species, which is apparently the undeveloped form of some other plant, possibly P. versicolor (L.) Fr. or Lenzites betulina (L.) Fr. Owing to the uncertainty regarding the identity of this plant it cannot be accepted as the type of a genus.

12. CERATOPHORA Humb. Fl. Friberg. 112-114. 1793.—Erected upon a monstrous variety of Boletus annulatus Schæff (Trametes odorata (Wulf.) Fr. called Ceratophora fribergensis

by Humboldt, the genus name referring to its branched appearance. The normal form, common in Europe, was probably unknown to Humboldt at this time since it is not listed in his work.

13. XYLOMETRON Paulet, Icon. Champ. pl. 3. f. 1-4. 1793. —Based on X. lobatum and two other species, none of which are determinate.

14. PYREIUM Paul. Icon. Champ. pl. 5. f. 1-3. 1793.— Based on P. giganteum Paul. [Xylostroma giganteum (Paul.) Tode] and some doubtful species of the Polyporaceæ. Since the first species is determinate, it stands as the type.

15. POLYPORUS (Mich.) Paul. Icon. Champ. pl. 13. 1793. — The genus Polyporus as established by Micheli in Nov. Pl. Gen. 129. pl. 70-71. 1729, was such a natural division and so clearly distinguished that it remained intact for over a century. Its nomenclatorial type was P. leptocephalus (Jacq.) Fr. and associated with this species were some of the most common and well known members of the family. Unfortunately, however, Linnæus retained the name Boletus for all pore-bearing fungi and those mycologists who adopted Micheli's genus failed to establish it according to modern ideas. Adanson, for example, only cited Micheli's figures and listed no properly named species, Haller used polynomials, and Scopoli in his introduction listed no species at all under Polyporus. It is not until the publication of Paulet's work in 1793 that the genus is securely established. This work, written twenty or more years before its publication, contains descriptions and figures of six species of Polyporus; P. ulmi, P. frondosus, P. umbilicatus, P. carbonarius, P. fasciatus and P. tuberaster, four of which belong to Micheli's genus in the strictest sense. The first species, P. ulmi, is the very common and well known P. squamosus (Huds.), synonymous with P. caudicinus (Scop.), and must be considered the nomenclatorial type of Polyporus according to principles now in vogue. The general use of Polyporus instead of Boletus is due to Fries, who, knowing nothing of Paulet's work, "restored" the name in 1815 and popularized it in spite of the influence of Linnæus.

16. SCUTIGER Paul. Icon. Champ. pl. 31. f. 1-3. 1793.— Based on S. tuberosus Paul. and a few other species which are now placed in different genera.

17. PORIA Pers. Neues Mag. Bot. 1:109. 1794.— Based on P. medulla-panis (Jacq.) and two other species now considered generically distinct. See Poria of Adanson.

18. MUCILAGO Hoffm. Bot. Taschenb. pl. 12. f. 2. 1795. — Preoccupied by Mucilago Scop. belonging to another family of plants. Synonymous with Xylophagus Link.

19. DAEDALEA Pers. Syn. Fung. 499. 1801.— Founded on D. quercina (L.) and four other species. Before listing these species, Persoon quotes Battarra at some length and identifies most of the figures on his pl. 38. No mention is made of

Adanson and his genus Striglia, based on the same plate. Synonymous with Agaricus L. based on Agaricus quercinus L.

20. FAVOLUS Palis. Fl. Owar. 1:1. pl. 1. 1805.— Founded on a single species, F. hirtus Palis. This plant, which is commonly known as Hexagonia hirta Palis., recalls the true honeycomb-like structure of the hymenium which was originally the distinguishing feature of the genus Favolus.

21. MICROPORUS Palis. Fl. Owar. 1:12. pl. 43. 1805.— Founded on M. perula Palis. and three other species, M. perennis (L.), M. fuligineus (Fr.), and M. nummularius (Fr.). M. perula is commonly known as P. xanthopus Fr.

22. XYLOPHAGUS Link, Berl. Mag. 3:38. 1809.— The name was proposed for the section of Merulius called Serpula by Persoon in his Synopsis, 496, 1801 and is therefore to be considered as based upon X. lacrymans (Wulff.) and the four other species there listed. In 1825, Persoon proposed the name Xylomyzon for the same group. The name Merulius should be used in place of Cantharellus, for a genus of the Agaricaceæ, since Merulius Hall. (En. Stirp., Helv. 1:33. 1742), based on species now placed in Cantharellus, was taken up by Boehmer in Ludwig's Def. Gen. 492, 1760, several years prior to the establishment of the genus Cantharellus.

The group of plants comprised in the genus Xylophagus do not properly belong with the Polyporaceæ, so I have proposed for them and their allies a new family, the Xylophagaceæ, with Xylophagus as the type genus (see Torreya, 3:7, 1903).

23. LEPTOPORA Rafin. Desv. Journ. Bot. 2:177. 1809.— Founded on L. nivea Rafin. and two other species. Probably a synonym of Poria Pers. or Xylophagus Link, but the identity of the species is in doubt.

24. PHORIMA Rafin. Desv. Journ. Bot. 2:177. 1809.— Founded on P. betulina Rafin, and two other species. Probably a synonym of Hexagona Poll. but the identity of the species is in doubt.

25. HEXAGONA Poll. Pl. Nov. 35. pl. 2-3. 1816.— Founded on H. alveolaris (DC.), (Favolus europæus Fr.). Persoon in Mycol. Eur. 2:35. 1825 cites this genus twice, spelling it Hexagonia. At Kew it is still spelled Hexagona. Although the form of the word is objectionable it seems best to use it as Pollini first wrote it.

26. POROTHELIUM Fr. Obs. 2:272. 1818.— Based on P. fimbriatum (Pers.) Fr. and P. lacerum Fr. listed in this order. According to Massee, this genus properly belongs with the Hydnaceæ.

27. SERPULA S. F. Gray, Brit. Pl. 1:637. 1821.—Founded on Serpula lacrymans (Wulf.), the earlier name Merulius of Hall being replaced and quoted as a synonym. The name Serpula had previously been assigned by Persoon and by Fries to a

section only of Merulius. Gray uses Merulius for a part of the genus Cantharellus and Link had proposed the name Xylophagus for the section Serpula of Persoon as early as 1809.

28. GRIFOLA S. F. Gray, Nat. Arr. Brit. Pl. 1:643. 1821.— Based on G. frondosa (Dicks.) and five other species, only one of which is congeneric with the type.

29. COLTRICA S. F. Gray, Nat. Arr. Brit. Pl. 1:644. 1821. Based on C. perennis (L.) and two other species which belong in a different genus.

30. ALBATRELLUS S. F. Gray, Nat. Arr. Brit, Pl. 1:645. 1821.— Founded on A. ovinus (Schæff.) and one other species. Gray's citation of Micheli as the author of this and several other generic names used by him is not in accord with modern usage, since Micheli did not use these names for properly constituted genera. Synonymous with Scutiger Paul. established in 1793.

31. STRILIA S. F. Gray, Nat. Arr. Brit. Pl. 1:645. 1821. — Based on S. cinnamomea (Jacq.), a single species, which if not identical with P. perennis (L.) Fr. is at least congeneric with it. It is therefore to be regarded as a synonym of Coltricia S. F. Gray. The living plant was probably unknown to Gray, otherwise this mistake would hardly have occurred.

32. CERRENA S. F. Gray, Nat. Arr. Brit. Pl. 1:649. 1821. —Founded upon C. unicolor (Bull.) (Dædalea unicolor (Bull.) Fr.), a single species. Synonymous with Agaricus.

33. XYLOMYZON Pers. Mycol. Eur. 2:26. 1825.—Based on X. lacrymans (Wulf.) and fourteen other species. Merulius is cited in synonymy. A synonym of Xylophagus Link proposed in 1809.

34. CYCLOMYCES Fr. Linnæa 5:512. 1830.— Based on C. fuscus Fr. sent to Fries by Kunze in Sieber crypt, exs. n. 63. The specimen was already named but the publication belongs to Fries. Loxophyllum Kl. Hook. Misc. 2:150. pl. 79, 1831, based on L. velutinum Kl. mss., was published only as a synonym of Cyclomyces Kze. Klotsch accepted this latter name, which he thought existed only in the mind of Kunze, making his own manuscript name a synonym; at the same time being ignorant of the fact that Fries had published Kunze's name a year before; and apparently not knowing that Loxophyllum had been proposed in 1826 for a genus of the Gesneriaceæ.

35. LASCHIA Fr. Linnæa V: 533. 1830.— At first monotypic, founded on L. delicata Fr., which, according to Patouillard, and others, belong to the Tremellaceæ.

36. PHYSISPORUS Chev. Flor. Par. 1:261. 1836.— Based on P. obliquus (Pers.) and eight other species.

37. CERIOMYCES Corda in Sturm, Deutsch. Krypt. Fl. 3:133. t. 61. 1837. — Based on the spurious species, C. fischeri Corda. No reference is made here to Ptychogaster, another spurious genus proposed by Corda about the same time.

38. CLADOSPORUS Chev. Fung. 1837. — Based on C. fulvus Chev., a single species with branched pilei covered over their whole surface with tubes. The plant appears to resemble abnormal forms of Polyporus rufescens Fr., but the original description is not available and Gillet's description in Champ. 1:693, 1878, may be incomplete.

39. LENZITES Fr. Epicr. 403. 1838.— Founded on L. applanata Fr. and nineteen other species.

40. TRAMETES Fr. Epicr. 488. 1838. — Founded on T. benzoina (Wahl.) and nineteen other species. In Novæ Symbolæ, 94, 1851, Fries said that he had up to that time considered Trametes a subgenus of Polystictus forms. Then follows a division into tribes, as was his custom with genera, and a listing of species, in which T. (Scutatæ) elegans (Spr.) stands first. The genus, was, however, properly established in the Epicrisis.

41. PTYCHOGASTER Corda, Icon. Fung. 2:24. 1838. — Founded on Pt. albus Cord., a single species. There is no reference made by the author to his genus Ceriomyces, which, like the present genus, is spurious.

42. LASCHIA Jungh. Verh. Bat. Genootsch. 1839.— Established on L. crustacea Jungh. and one other species, L. spathulata Jungh. According to Montagne and Berkeley the two species are not congeneric. Preoccupied by Laschia Fr. 1830.

43. ASCHERSONIA Endl. Add. 103. 1842.— Proposed for Laschia Jungh. because this name was preoccupied by Laschia Fr. Its type is therefore L. crustacea Jungh. This use of the name Aschersonia has precedence over that made of it by Montagne in 1856 for a genus of the Nectrioideæ.

44. JUNGHUHNIA Corda, Anl. Myc. 195. 1842. — Proposed for Laschia Jungh. because Laschia Fr. had been published in 1830. Preoccupied by Aschersonia Endl. published earlier in the same year and cited as a synonym.

45. HYMENOGRAMME Mont. & Berk. Lond. Journ. Bot. 329. 1844.— Based on H. javensis Mont. & Berk., a single species, which, according to Saccardo, is congeneric with Laschia crustacea Jungh. and Laschia spathulata Jungh., the two species upon which Laschia Jungh. was founded. If this is true, Hymenogramme Mont. & Berk. is only a synonym of Aschersonia Endl.

46. GLOEOPORUS Mont. Cuba, 234. 1845.— Founded on a single species, G. conchoides Mont., a member of the Xylophagaceæ (Torreya, 3:7. 1903).

47. THELEPORA Fr. Hornsch. Skand. Beitr. 2:338. 1847. — Based on T. cretacea Fr., a single species.

48. ENSLINIA Fr. Summ. Veg. Scand. 2:399. 1849.— Founded on Sphæria pocula Schw. and one other species. Name preoccupied by Enslinia Rchb. 1827.

49. POLYSTICTUS Fr. Nov. Sym. 70. 1851. — Founded on P. parvulus (Kl.) and a number of other species. A synonym of Coltricia Gray, proposed in 1821.

50. FOMES Gill. Champ. 1:682. 1878.— Founded on F. ungulatus (Schaeff.) [F. marginatus (Fr.)] and sixteen other species. The name was used by Fries in Nov. Sym. 46, 1851, for a section of Polyporus. Karsten took up the name for generic use in 1879, a year after its adoption by Gillet.

51. MERISMA Gill. Champ. 1:688. 1878.— Based on M. imberbe (Bull.) and twelve other species. Name preoccupied for nearly a century, being used by different authors for groups of fungi in which the fruit body was branched. Persoon used it for a group of the Clavariaceæ.

52. POLYPORELLUS Karst. Medd. Soc. Faun. et Fl. Fenn. 5:37. 1879.— Founded on P. polyporus (Retz.) [P. brumalis (Fr.)] and several other species. A synonym of Polyporus.

53. ISCHNODERMA Karst. Medd. Soc. Faun. et Fl. Fenn. 5:38. 1879.— Based on I. rubiginosum (Schrad.) [P. resinosus (Schrad.)] and forms intermediate between this species and I. benzoinum (Fr.) A synonym of Trametes Fr. established in 1838.

54. BJERKANDERA Karst. Medd. Soc. Faun. et Fl. Fenn. 5:38. 1879.— Based on B. adusta (Willd.) and six other species.

55. INONOTUS Karst. Medd. Soc. Fann. et Fl. Fenn. 5:39. 1879.— Founded on In. cuticularis (Bull.), In. hispidus (Bull.), In. unicolor (Schw.) and In. hypococcinus (Berk.).

56. INODERMA Karst. Medd. Soc. Faun. et Fl. Fenn. 5:39. 1879.— Founded on In. radiatum (Sow.) and several other species. Preoccupied by Inoderma Gray Nat. Arr. Brit. Pl. 1: 498, 1821, a genus of lichens.

57. ANTRODIA Karst. Medd. Soc. Faun. et Fl. Fenn. 5:40. 1879.— Based on Antr. mollis (Sommerf.) and five other species.

58. HANSENIA Karst. Medd. Soc. Faun. et Fl. Fenn. 5:40. 1879.— Established on H. hirsuta (Wulf.) together with H. velutina (Fr.), H. zonata (Fr.), H. versicolor (L.), H. decipiens (Schw.), H. barbatula (Fr.), H. vellerea (Berk.), H. umbonata (Fr.), H. zonalis (Berk.), and other species not found in North America. Name proposed by Turcz, in Bull. Soc. Nat. Mosc. 17:754, 1844, for a genus of the Umbelliferæ.

59. POLYPILUS Karst. Rev. Myc. 3:17. 1881.— Founded on P. frondosus (Dicks.) and two other species, P. confluens (A. & S.) and P. speciosus (Batarr.) [P. sulfureus (Bull.)] A synonym of Grifola Gray, 1821.

60. TYROMYCES Karst. Rev. Myc. 3:17. 1881.— Established upon T. chioneus (Fr.) and T. pallescens (Fr.). Difficult to distinguish from Bjerkandera Karst. and for the present at least considered synonymous with it.

61. POSTIA Karst. Rev. Myc. 3:17. 1881.— Based on P. borealis (Fr.) and five other species. Preoccupied by Postia Boiss. & Blanche, Boiss. Fl. Orient. 3:182, 1875, a genus of the Compositæ.

62. GANODERMA Karst. Rev. Myc. 3:17. 1881.— A monotypic genus founded on Ganoderma flabelliformis (Scop.) [Polyporus lucidus (Leys.) Fr.] See Torrey Bulletin for October, 1902.

63. PIPTOPORUS Karst. Rev. Myc. 3:17. 1881.— Based on P. suberosus (L.), a single species.

64. FOMITOPSIS Karst. Rev. Myc. 3:18. 1881.— Established upon F. ungulatus (Batsch.) [F. pinicola (Fr.)] and two other species. Synonymous with Fomes Gill. established in 1878.

65. HAPALOPILUS Karst. Rev. Myc. 3:18. 1881.— Based on a single species, H. nidulans (Fr.)

66. PYCNOPORUS Karst. Rev. Myc. 3:18. 1881.—Founded on P. cinnabarinus (Jacq.), a single species. It had previously been used by Karsten only as a subgenus.

67. CALOPORUS Karst. Rev. Myc. 3:18. 1881. — Established upon a single species, C. incarnatus (Alb. & Schw.).

68. GLOEOPHYLLUM Karst. Hattsv. 2:X, 79. 1879-1881. —Based on G. hirsutum (Schaeff.) (G. saepiarium (Fr.). Name changed later by the author to Lenzitina.

69. TILOTUS Kalch. Grev. 9:137. June 1881. — Based on T. lenzitiformis Kalch., a single species, collected in Africa by J. M. Wood. The character of the genus is its tomentose gills. The author doubted if it were sufficiently distinct from Lenzites Fr. Name preoccupied by Tylotus J. Aig. Epicr. 428. 1876, a genus of the Florideae. I propose the new name Tomentifolium for this genus.

70. STIGMATOLEMMA Kalchbr. Grev. 10:104. 1882. — Based on S. incanum Kalch., a single species, which, according to Saccardo, is not distinct from species of Porothelium Fr.

71. BRESADOLIA Speg. Fung. Guar. 1:15. 1883. — Based on B. paradoxa Speg., a single species. Spurious.

72. MYRIADOPORUS Peck, Bull. Torr. 11:27. 1884. — Founded on M. adustus (Willd.) Peck. The author had some misgivings at the time, as is proved by his hesitation in adding another species, M. induratus Pk. to the genus just established. Spurious because based on abnormal forms; and also a synoym of Bjerkandera Karst. proposed in 1879 for Polyporus adustus (Willd.) Fr. and several other species.

73. CALOPORUS Quél. Ench. 164. 1886. — Based on Cal. subsquamosus (L.) and seven other species. A synonym of Scutiger Paul., 1793, and name preoccupied by Caloporus Karst. 1881.

74. LEUCOPORUS Quél. Ench. 165. 1886. — Founded

upon L. lepideus (Fr.) and ten other species. A synonym of Polyporellus Karst. established in 1879.

75. PELLOPORUS Quél. Ench. 166. 1886. — Founded on P. triqueter (Fr.) and six other species. Synonymous with Inonotus Karst., established in 1879.

76. CERIOPORUS Quél. Ench. 167. 1886. — Founded on C. caudicinus (Scop.) [P. squamosus (Huds.)] and five other species. A synonym of Polyporus.

77. CLADOMERIS Quél. Ench. 167. 1886. — Founded on C. ramosissima (Scop.) [Cl. umbellata (Fr.)] and sixteen other species. Synonymous with Grifola of Gray proposed in 1821.

78. PLACODES Quél. Ench. 170. 1886. — Founded on P. flabelliformis (Scop.) [F. lucidus (Leys.) Fr.] and a number of other species, twenty-five or more in all. A synonym of Ganoderma Karst. established in 1881.

79. PHELLINUS Quél. Ench. 172. 1886. — Based on P. igniarius (L.) and three other species. Since this name is preoccupied by Phelline, assigned in 1826 to a genus of the Ebenaceae, I proposed the name Pyropolyporus for the present genus, referring to the ancient use of P. igniarius and closely allied members of the genus for the purpose of keeping fire. See Torrey Bulletin, 30:109. 1903.

80. INODERMUS Quél. Ench. 173. 1886. — Based on In. hispidus (Bull.) and several other species. A synonym of Inonotus Karst. established in 1879. The name has later been applied to a genus of Algae. Compare also Inoderma Karst. 1879.

81. CORIOLUS Quél. Ench. Fung. 175. 1886. — Founded on Cor. lutescens (Pers.) and seven other species.

82. LEPTOPORUS Quél. Ench. 175. 1886. — Founded on a long list of species, the first being L. epileucus (Fr.). Name preoccupied by Leptopora Rafin. 1809. Synonymous with Bjerkandera Karst.

83. MELANOPUS Pat. Hym. d'Europ. 137. 1887. — Founded on M. caudicinus (Scop.) [P. squamosus (Huds.)] and several other species. A synonym of Cerioporus Quél. established in 1886.

84. SPONGIPELLIS Pat. Hym. d'Eur. 140. 1887. — Founded on S. spumeus (Sow.) and "some others." Not distinct from Bjerkandera Karst.

85. GYROPHORA Pat. Hym. Eur. 143. 1887. — Based on "G. lacrymans, G. umbrina, etc.," species of Merulius with colored spores. Name preoccupied for a genus of lichens. Synonymous with Xylophagus, a genus of the Xylophagaceae.

86. POROPTYCHE Beck. Verh. Zool. Bot. Ges. Wien 657. 1888. — Based on P. candida Beck, a single species.

87. OCHROPORUS Schroet. Fl. Schles. 3:483. 1888. — Based on O. contiguus (Pers.) and eighteen other species.

88. PHAEOPORUS Schroet. Fl. Schles. 3:489. 1888. — Based on P. obliquus (Pers.) and five other species.

89. DAEDALEOPSIS Schroet. Krypt. Fl. Schles. 3:492. 1888. — A monotypic genus based on D. labyrinthiformis (Bull.) [D. confragosa (Pers.)]. Type congeneric with the type of Daedalea.

90. MUCRONOPORUS Ell. & Ev. Journ. Myc. 5:28. March 1889. Based on M. circinatus (Fr.) and eleven other species.

91. PHYSISPORINUS Karst. Krit. Ofvers. af Fin. Basidsv. 324. 1889. — Based on Ph. vitreus (Pers.), a single species.

92. ONNIA Karst. Finlands Basidsv. 326. 1889. — Founded on O. circinata (Fr.) and one other species, O. tomentosa (Fr.). The distinguishing feature of the genus is the presence of slender, pointed brown cystidia. Synonymous with Mucronoporus Ell. & Ev. established earlier in the same year.

93. ELFVINGIA Karst. Krit. Ofversigt af Fin. Basidsv. 333. 1889. — A monotypic genus based on E. lipsiensis (Batsch) [Fomes applanatus (Pers.)]. See Torrey Bulletin for May 1903.

94. LENZITINA Karst. Finlands Basidsv. 337. 1889. — Based on L. hirsuta (Schaeff.) [L. saepiaria (Fr.)] and two other species. Synonymous with Gloeophyllum Karst. Hattsv. 2:X, 79. 1879-1881. For some reason, probably on account of its inappropriateness, the latter name was changed to Lenzitina in 1889.

95. OLIGOPORUS Bref. Unters. 8:114-118. pl. 7. f. 12-22. 1889. — Founded on O. farinosus Bref. and two other newly described species. O. farinosus properly belongs to the genus Tyromyces Karst. 1881.

96. HETEROBASIDION Bref. Unters. 8:154. 1889. — Based on a single species, H. annosum (Fr.), which is described at great length. Preoccupied by Heterobasidium Mass., 1888. Synonymous with Fomes.

97. CAMPBELLIA Cke. & Mass. Grev. 18:87. 1889. — Founded on C. infundibuliformis Cke. & Mass. and C. africana Cke. & Mass. Preoccupied by Campbellia Wight, a genus of phanerogams and therefore replaced by Rodwaya H. & P. Sydow, Hedw. 40:(2). 1901.

98. TRECHISPORA Karst. Hedw. 29:147. 1890.—Founded on T. onusta Karst., a single species.

99. CHAETOPORUS Karst. Hedw. 29:148. 1890. — Based on C. tenuis Karst., a single species. According to some authorities this species is synonymous with B. resupinatus Bolton, pl. 165, 1791, and P. spongiosus Pers.

100. SCLERODEPSIS Cke. Grev. 19:49. 1890. — Founded on S. colliculosa (Berk.) and three other species, S. berkeleyi (Cke.), S. lobata (Berk.) and S. beyrichii (Fr.), all taken from the genus Trametes. In this genus the pileus is thin and flat

with acute margin and the edges of the pores are acute and sometimes dentate.

101. LACCOCEPHALUM MacAlpine & Tepper. A New Australian Stone-making fungus 166. pl. 10. 1890(?). — Founded on L. basilapidoides MacAlp. & Tepp., a single species.

102. MYCODENDRON Mass. Jour. Bot. 1. pl. 300, f. 14-16. 1891. — Based on M. paradoxum Mass., a single species.

103. PODOPORIA Karst. Hedw. 31:297. 1892. — Founded on a single species, P. confluens Karst. The resupinate pileus is attached only at the center.

104. SCENIDIUM Kuntze. Revis. Gen. 515. 1893. — Founded on Sc. hirtum (Beauv.) Kze., a species of Favolus. Kuntze gets the name from Klotsch who used it for a subgenus in Linnaea, 7:200. pl. 10. 1832.

105. SARCOPORIA Karst. Hedw. 33:15. 1894. — Based on S. polyspora Karst., a single species closely allied to the Xylophagaceae.

106. FAVOLASCHIA Pat. Bull. Boiss. 54. 1895. — Founded on F. saccharina Pat., a single species. This genus belongs with the Xylophagaceae.

107. HENNINGSIA Möll. Protobasid. 44. 1895. — Based on H. geminella Möll., a single species.

108. XANTHOCHROUS Pat. Cat. Tun. 51-52. 1897. — Based on X. tomentosus (Fr.) and a number of other species from various recognized genera, which are thrown together chiefly because of similarity in spore coloration. A synonym of Mucronoporus Ell. & Ev. based on M. circinatus (Fr.) Ell. & Ev., a congener of X. tomentosus (Fr.).

109. GYROPHANA Pat. Cat. Tun. 53. 1897. — Substituted for Gyrophora Pat. Hym. Eur. 143, 1887, because the latter name was found to be preoccupied. Synonymous with Xylophagus Link.

110. POROLASCHIA Pat. Bull. Soc. Myc. 55. 1898. — Based on P. micropora Pat., a single species. Whether the above citation is correct for the establishment of the genus it is impossible for me now to determine, but the species, the only one known, is described there as new and I know of no other reference to the genus.

111. RODWAYA H. & P. Syd. Hedw. 40:(2). 1901. — This name was substituted for Campbellia Cke. & Mass., which was preoccupied by Campbellia Wight, a genus of the Scrophulariaceae. The original species are cited and transferred, i. e. R. infundibuliformis (Cke. et Mass.) Syd. and R. africana (Cke. et Mass.) Syd., in the original order.

112. CRYPTOPORUS Shear. Bull. Torr. 29:450. Jul. 1902. — A monotypic genus based on Cryptoporus volvatus (Peck).

ALPHABETICAL SUMMARY.

Names free to be used are in capitals; synonyms in lower case; the species with which the generic name is to be permanently associated follows the date.

AGARICUS L. 1753. — A. quercinus L.

Agaricon Adans. 1763. — A. igniarium (L.). Name preoccupied. See Pyropolyporus.

Albatrellus S. F. Gray. 1821. — A. ovinus (Schaeff.). See Scutiger.

ANTRODIA Karst. 1879. — A. mollis (Sommerf.).

ASCHERSONIA Endl. 1842. — A. crustacea (Jungh.).

BJERKANDERA Karst. 1879. — B. adusta (Willd.).

Bresadolia Speg. 1883. — B. paradoxa Speg. Genus spurious.

CALOPORUS Karst. 1881.—C. incarnata (Alb. & Schw.).

Caloporus Quél. 1886. — C. subsquamosus (L.). Name preoccupied by Caloporus Karst. See Scutiger.

Campbellia Cke & Mass. 1889. — C. infundibuliformis Cke. & Mass. See Rodwaya.

Cellularia Bull. 1788. — Type indeterminate.

Ceratophora Humb. 1793. — C. annulatus (Schaeff.). Spurious, established on abnormal forms.

Ceriomyces Batarr. 1755. — C. crassus Batarr. (Boletaceae.)

Ceriomyces Corda. 1837. — C. fischeri Corda. A spurious genus with a preoccupied name.

Cerioporus Quél. 1886. — C. caudicinus (Scop.). See Polyporus.

Cerrena S. F. Gray. 1821. — C. unicolor (Bull.). See Agaricus.

CHAETOPORUS Karst. 1890. — C. tenuis Karst.

Cladomeris Quél. 1886. — C. ramosissima (Scop.). See Grifola.

Cladosporus Chev. 1837. — C. fulvus Chev. Probably spurious.

COLTRICIA S. F. Gray. 1821. — C. perennis (L.).

CORIOLUS Quél. 1886. — C. lutescens (Pers.).

CRYPTOPORUS Shear. 1902. — C. volvatus (Peck).

CYCLOMYCES Fr. 1830. — C. fuscus Fr.

Daedalea Pers. 1801. — D. quercina (L.). See Agaricus.

Daedaleopsis Schroet. 1888. — D. labyrinthiformis (Bull.). See Agaricus.

ELFVINGIA Karst. 1889. — E. lipsiensis (Batsch).

Enslinia Fr. 1849. — E. pocula (Schw.). Name preoccupied.

Favolaschia Pat. 1895. — F. saccharina Pat. (Xylophagaceae.)

FAVOLUS Palis. 1805. — F. hirtus Palis.

FOMES Gill. 1878. — F. ungulatus (Schaeff.) Sacc.

Fomitopsis Karst. 1881. — F. ungulatus (Schaeff.). See Fomes.

GANODERMA Karst. 1881. — G. flabelliforme (Scop.).

GLOEOPHYLLUM Karst. 1881.—G. hirsutum (Schaeff.).

Gloeoporus Mont. 1845. — G. conchcoides Mont. (Xylophagaceae.)

GRIFOLA S. F. Gray. 1821. — G. frondosa (Dicks.).

Gyrophana Pat. 1897. — See Gyrophora. See Xylophagus.

Gyrophora Pat. 1887. — G. lacrymans (Wulf.). Name preoccupied. See Xylophagus.

Hansenia Karst. 1879. — H. hirsuta (Wulf.). Name preoccupied. See Coriolus.

HAPALOPILUS Karst. 1881. — H. nidulans (Fr.).

Heterobasidion Bref. 1889. — H. annosum (Fr.). Name preoccupied. See Fomes.

HEXAGONA Pall. 1816. — H. alveolaris (DC.).

Hymenogramme Mont. & Berk. 1844. — H. javensis Mont. & Berk. Name preoccupied. See Aschersonia.

Inoderma Karst. 1879. — In. radiatum (Sow.). Name preoccupied.

Inodermus Quél. 1886. — In. hispidus (Bull.). Name preoccupied. See Inonotus.

INONOTUS Karst. 1879. — In. cuticularis (Bull.).

Ischnoderma Karst. 1879. — I. rubiginosum (Schrad.). See Trametes.

Junghuhnia Corda. 1842. — J. crustacea (Jungh.). Name preoccupied. See Aschersonia.

Kordera Adans. 1763. — Not based on a binomial species.

LACCOCEPHALUM MacAlp. & Tepp. 1890(?). — L. basilapidoides MacAlp. & Tepp.

Laschia Fr. 1830. — L. delicata Fr. (Tremellaceae.)

Laschia Jungh. 1839. — L. crustacea Jungh. Name preoccupied. See Aschersonia.

LENZITES Fr. 1838. — L. applanata Fr.

Lenzitina Karst. 1889. — L. hirsutum (Schaeff.). See Gloeophyllum.

Leptopora Rafin. 1809. — Species indeterminate.

Leptoporus Quél. 1886. — L. epileucus (Fr.). Name preoccupied. See Bjerkandera.

Leucoporus Quél. 1886. — L. lepideus (Fr.). See Polyporellus.

Melanopus Pat. 1887. — M. caudicinus (Scop.). See Cerioporus.

Merisma Gill. 1878. — M. imberbe (Bull.). Name preoccupied. See Bjerkandera.

Merulius (Hall.) Boehm. 1760. — (Agaricaceae, as the name is used by Saccardo.)

MICROPORUS Palis. 1805. — M. perula Palis.

Mison Adanson. 1763. Not based on a binomial species. See Pyropolyporus.

Mucilago Hoffm. 1795. — Preoccupied by Mucilago Scop. See Xylophagus.

MUCRONOPORUS Ell. & Ev. 1889. — M. circinatus (Fr.).

MYCODENDRON Mass. 1891. — M. paradoxum Mass.

Myriadoporus Peck. 1884. — M. adustus (Willd.). See Bjerkandera. Based on abnormal forms.

OCHROPORUS Schroet. 1888. — O. contiguus (Pers.).

Oligoporus Bref. 1889. — O. farinosus Bref. See Tyromyces.

Onnia Karst. 1889. — O. circinata (Fr.). See Mucronoporus.

Pelloporus Quél. 1886.— P. triqueter (Fr.). See Inonotus.

Phaeporus Schroet. 1888. — P. obliquus (Pers.). See Physisporus.

Phellinus Quél. 1886. — P. igniarius (L.). Name preoccupied. Pyropolyporus proposed. See Torrey Bulletin for Feb. 1903.

Phorima Rafin. 1809. — Species indeterminate.

PHYSISPORINUS Karst. 1889. — Ph. vitreus (Pers.).

PHYSISPORUS Chev. 1836. — P. obliquus (Pers.).

PIPTOPORUS Karst. 1881. — P. suberosus (L.).

Placodes Quél. 1886. — P. flabelliformis (Scop.). See Ganoderma.

PODOPORIA Karst. 1892. — P. confluens Karst.

Polypilus Karst. 1881. — P. frondosus (Dicks.). See Grifola.

Polyporellus Karst. 1879. — P. polyporus (Retz). See Polyporus.

Polyporus (Mich.) Adans. 1763. — Not founded on a binomial.

POLYPORUS (Mich.) Paulet. 1793. — P. caudicinus (Scop.).

Polystictus Fr. 1851. — P. parvulus (Kl.). See Coltricia.

Poria Adans. 1763. — Not founded on a binomial.

PORIA Pers. 1794. — P. medullapanis (Jacq.).

Porolaschia Pat. 1898. — P. micropora Pat. (Xylophagaceae.)

POROPTYCHE Beck. 1888. — P. candida Beck.

Porothelium Fr. 1818. — P. fimbriatum (Fers.). (Hydnaceae?).

Postia Karst. 1881. — P. borealis (Fr.). Name preoccupied. See Bjerkandera.

Ptychogaster Corda, 1838. — Pt. albus Corda. Spurious.

PYCNOPORUS Karst. 1881. — P. cinnabarinus (Jacq.)

Pyreium Paul. 1793. — P. giganteum Paul. Not in the Polyporaceae.

PYROPOLYPORUS Murrill. 1903. — P. igniarius (L.).

RODWAYA H. & P. Sydow. 1901. — R. infundibuliformis (Cke. & Mass.).

SARCOPORIA Karst. 1894. — S. polyspora Karst. Allied to Xylophagus.

Scenidium Kze. 1893. — S. hirtum (Palis.) Kze. See Favolus.

SCLERODEPSIS Cke. 1890. — S. colliculosa (Berk.).

SCUTIGER Paul. 1793. — S. tuberosus Paul.

Serda Adans. 1763. — Not based on a binomial. See Gloeophyllum.

Serpula Gray. 1821. — S. lacrymans (Wulf.). See Xylophagus.

Sesia Adans. 1763. — Not based on a binomial. See Gloeophyllum.

Spongipellis Pat. 1887. — S. spumeus (Sow.). See Bjerkandera.

Stigmatolemma Kalch. 1882. — S. incanum Kalch. See Porothelium.

Striglia Adans. 1763. — Not based on a binomial. See Agaricus.

Strilia Gray. 1821. — S. cinnamomea (Jacq.). See Coltricia.

THELEPORA Fr. 1847. — T. cretacea Fr.

Tilotus Kalch. 1881. — T. lenzitiformis Kalch. Name preoccupied. See Tomentifolium.

TOMENTIFOLIUM nom. nov.— T. lenzitiforme (Kalch.).

TRAMETES Fr. 1838. — T. benzoina (Wahl.).

TRECHISPORA Karst. 1890. — T. onusta Karst.

Tyromyces Karst. 1881. — T. chioneus (Fr.). See Bjerkandera.

Xanthochrous Pat. 1897. — X. tomentosus (Fr.). See Mucronoporus.

Xylometron Paul. 1793. — Type indeterminate.

Xylomyzon Pers. 1825. — X. lacrymans (Wulf.). See Xylophagus.

Xylophagus Link. 1809. — X. lacrymans (Wulf.). Proposed in Torreya 3:7, 1903, as the type of a new family, the Xylophagaceae.

New York City.

THE GENUS SARCOSOMA IN NORTH AMERICA.

ELIAS J. DURAND.

The genus *Sarcosoma* includes several large gelatinous *Bulgaria*-like Discomycetes. It was proposed by Caspary, in a letter to Winter, for the *Bulgaria globosa* Fries, and a new variety, var. *platydiscus* Caspary. The description first appeared in Rehm's Discomycetes, page 497, 1891. In this place Dr. Rehm doubtfully referred to it the *Bulgaria rufa* Schw., and this species has remained the only known representative from North America. In August, 1901, I collected, at Blowing Rock, North Carolina, two *Bulgaria*-like fungi which are referable to this genus, and I have thought it desirable to bring together at this time complete descriptions of such forms as are at present known to occur in our flora. All of the following descriptions were made by me after a careful examination of the living plants, and the changes made by drying have also been noted.

SARCOSOMA Caspary, in Rabenh. Krypt. Flora, 1[8]:497. 1891. *Burcardia* Schmidel, Anal. Plant. 3:261. 1797. (not Schreb. 1789). *Bulgaria* Fries, Syst. Myc. 2:166. 1822, in part.

A genus of the Bulgariaceæ. Plants not erumpent, sessile or stipitate, usually brown or blackish, at least externally, spongy-gelatinous. Asci long cylindrical. Spores 8, uniseriate, hyaline, continuous, elliptical. Paraphyses filiform, septate, branched.

Differs from Bulgaria principally in the superficial habit, and in the hyaline spores. Plants of large size growing on half buried sticks and branches.

A. Disk tawny-ochraceous
  B. Plants stipitate, watery-gelatinous, shrinking much in drying; spores narrowly elliptical, 18-25 x 8-12μ cortex parenchymatous. *S. rufum.*
  B. Plants sessile, tough-gelatinous, shrinking but little in drying; spores broadly elliptical, 25-30 x 15μ, cortex not parenchymatous. *S. carolinianum.*

A. Disk black, cinereous-olive when dry. *S. cyttarioides.*

SARCOSOMA RUFUM (Schw.) Rehm, Rabenh. Krypt. Flora 1[8]: 497. 1891. *Bulgaria rufa* Schw., Syn. Fung. Am. Bor. p. 178.

1834. Exsicc. Ellis, N. A. F. no. 449; Ravenel, Fung. Car. fasc. no. 23.

Plants solitary or crowded on the branch, stipitate; when young very small, ovate-cylindrical, closed, the apex warty, soon opening exposing the very small disk, the whole plant then increasing greatly in size until maturity when the disk is saucer-shaped or plane, 3-6 cm. in diam., tawny-ochraceous, margin thin, crenate; stem turbinate, 2-3 cm. long, 2 cm. thick above, narrowed below to a small point of attachment, the whole exterior covered with a thin, appressed, blackish-brown tomentum, more or less wrinkled or rugose; consistency watery-gelatinous. When dry much shrunken, horny and brittle, externally deeply wrinkled, and the disk usually changed to a dull grayish-black excipulum of very slender hyphæ passing at the surface into a thin cortex of rounded brown cells 10 μ diam. Asci narrowly cylindrical, apex truncate-rounded, not blue with iodine, 300-350 x 12 μ; spores 8, uniseriate, hyaline, or with a pale yellowish tint, smooth, continuous, eguttulate, narrowly elliptical, 18-25 x 8-12 μ (the majority 20 x 10 μ); paraphyses filiform, hyaline, septate, branched, apices very little thickened, not cohering.

On fallen, half-buried branches usually of oak, among leaves, June to August, common. Maine (Harvey); Mass. (Sprague); N. York (various col.); Penn. (various col.); N. Carolina (Curtis); Ohio (Morgan, James). The species will probably be found in all the States east of the Mississippi.

In the tpye, in herb. Schweinitz, the spores are narrowly elliptical, 20-25 x 8-10μ.

SARCOSOMA CAROLINIANUM Durand sp. nov.— Plants solitary, sessile, attached by a dark brown tomentum; at first closed, then opening by a pore at the apex, expanding and enlarging finally becoming saucer-shaped, up to 4 cm. diam. Disk tawny-ochraceous, externally brown, covered with a thick, appressed, brown tomentum, threads very long 7-8 μ thick, septate, rather shining, but little wrinkled; substance tough-gelatinous, not at all watery, so that the plant nearly retains its shape, size and color when dry. Consistency of the dry plant *corky,* not horny and brittle, and exterior nearly even. Flesh white, excipulum composed entirely of interwoven hyphæ which are thick and septate, 5-6 μ diam. Asci clavate-cylindrical, narrowed below to a long, slender pedicel, apex rounded, not blue with iodine, 400-450 x 18 μ, opening by a lid. Spores 8, uniseriate, hyaline, smooth, continuous, elliptical, 25-30 x 15 μ (the majority 28 x 15 μ); Paraphyses cylindrical, hyaline, septate, very little thickened at the free tips, 3 μ thick.

Attached to dead sticks, among leaves, on damp wooded slopes, alt. 3,500 ft., Blowing Rock, N. Carolina, Aug. and Sept., 1899, G. F. Atkinson (C. U. Herb. no. 4363); 1901, E. J. Durand (C. U. Herb. no. 12279).

This species is related to the last, but the characters may be contrasted as follows:

S. rufum.— Watery-gelatinous, turbinate or stipitate, attached by a narrow point, shrinking much in drying, becoming brittle and thin, the exterior much wrinkled, color usually changing, spores narrowly elliptical. Cortex parenchymatous.

S. carolinianum.— Tough-gelatinous, sessile by a broad base, changing but little in drying, becoming thick and corky, spores larger and broader proportionally. No parenchymatous cortex.

That the tougher substance of the present species when fresh is not due to dry weather conditions is shown by the fact that my own collection was made after two weeks of continuous rain and mist.

SARCOSOMA CYTTARIOIDES Rehm sp. nov.— Plants usually solitary but often 2-3 together, sessile, attached by a very narrow base; when young very small, closed, then opening by a minute pore above, enlarging and expanding, finally becoming plane or convex, the mature plant shaped like a biconvex lens, but somewhat more prominently convex below; disk dull black, usually with a dimple in the center; margin slight but distinct; externally black, more or less wrinkled or rugose, furfuraceous not tomentose, 1.5-3.5 cm. in diam., 1-2 cm. high; consistency spongy-gelatinous like soft rubber, substance greenish-yellow. Excipulum composed of very slender, long-drawn-out hyphæ, passing at the surface into a thin cortex of brown rounded cells, 8-10μ in diam., projecting in groups. Asci slenderly cylindrical, apex rounded, not blue with iodine, 300-350 x 15 μ; spores 8, uniseriate, hyaline continuous, smooth, narrowly elliptical, 25-30 x 12-14μ; paraphyses filiform, branched, yellow, cohering at the tips which are not yellow.

On dead stems of Kalmia, less commonly on oak, vitis and chestnut; also on leaves of chestnut, rhododendron etc.; observed also on living stems of Kalmia and chestnut near the ground. Thickets on the mountain side, alt. 3,500 ft., Blowing Rock, N. Carolina, Aug., 1901, Durand; found also by A. B. Troyer. (C. U. Herb. nos. 12278, 12279, 12280, 12281, 12282). Most abundant in Glen Burney.

The plants shrink very much in drying, and the disk becomes cinereous-olive. A beautifully distinct species. "Innerlich dem *S. platydiscus* und *rufum* nahe stehend."

NOTE: *Bulgaria globosa* Fr. is reported by Schweinitz, p. 178, but the specimen preserved in his herbarium is certainly not that species as described by Rehm and Karsten, and probably does not differ from *Sarcosoma rufum.*

Botanical Department, Cornell University.

TWO NEW SPECIES OF CERCOSPORA.

J. B. ELLIS AND W. A. KELLERMAN.

CERCOSPORA ÆSCULINA Ell. & Kellerm. n. sp. On leaves of Aesculus octandra. Marlinton, W. Va., Aug. 1902. (W. A. Kellerman.) Fig. 1.

Hypophyllous, scattered over the lower face of the leaf and forming small sphæriform tufts resembling somewhat the perithecia of Sphærella, but not on any spots though the upper surface of the leaf is marked with minute, snow-white, punctiform

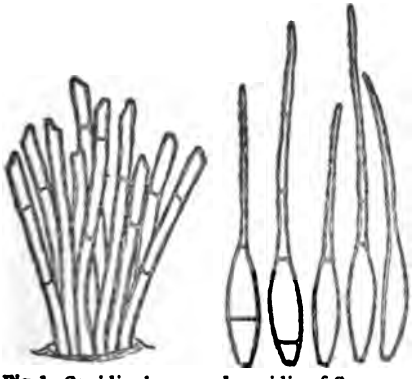

Fig. 1. Conidiophores and conidia of Cercospora æsculina Ell. & Kellerm.

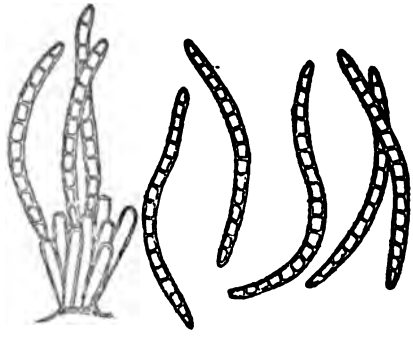

Fig. 2. Conidiophores and conidia of Cercospora guttulata Ell. & Kellerm.

spots. Hyphæ cespitose, pale-brown, nearly straight, 2-3-septate, slightly toothed above, bearing conidia 60-70 x 5-6 μ, abruptly contracted above and often distinctly constricted at one of the septa.

CERCOSPORA GUTTULATA Ell. & Kellerm. n. sp. On leaves of Aristolochia macrophylla. Marlinton, W. Va., Aug. 1902. (W. A. Kellerman.) Fig. 2.

Spots amphigenous, suborbicular, dirty gray with a narrow, nearly black border, ½-1 cm. diam. Hyphæ short (15-20 x 3-4 μ), amphigenous, but more abundant below, densely tufted, the tufts thickly scattered on the spots, cylindrical, straight or subundulate, simple, obtuse at the apex, nearly hyaline. Conidia cylindrical or slightly narrowed above, moderately curved, multiguttulate, becoming multiseptate, 45-80 x 4-5 μ, nearly hyaline.

Differs from C. serpentaria E. & E. and C. olivacea Sacc. in its much shorter hyphæ, and from the latter also in its curved conidia.

ANOTHER MUCH-NAMED FUNGUS.

W. A. KELLERMAN.

In the February number of this Journal was published by Ellis and Kellerman, the description of a fungus supposed to be new to the literature of Botany. The figure which accompanied the description served well to convey to the botanists at home and abroad a clear and accurate idea of the characters of the organism in question.

Professor Morgan and other eminent mycologists very kindly notified me promptly that it was a species described many years ago — though we had thought that the variation from Corda's species was unmistakable and as great as in case of many other plants proposed as new by botanists of more or less repute.

We are now quite willing to recede from our position and apologize for the unfortunate mistake made. It may not, however, be impertinent to remark that the case is perhaps not without its value in furnishing a convincing demonstration of the value, may I not say necessity, of invariably publishing figures of all the fungi (especially of the microscopic forms) proposed as new.

The synonomy which I give below shows that more than once before, when this form was issued as previously undescribed, the error was not readily or at all detected by most of the botanists, whereas figures might have arrested the attention of all the mycologists.

Two of the published names should perhaps first be specially mentioned, one by Pound and Clements and the other by R. Maire. Dr. Frederic E. Clements advised me that our species was published by him in The Univ. of Nebr. Bot. Stud. III, under the name of Botrytis (Polyactis) doryphora Pound & Clements, afterwards changed to Phymatotrichum doryphora Pound & Clements. I submitted a specimen to the latter for inspection, and he kindly returned the favor by sending a specimen of his species. We were both able to confirm the accuracy of his first judgment.

Herr Prof. Dr. Magnus of Berlin kindly wrote me a letter with full description and drawings, made from material I sent, which can not be reproduced in full here, but the following extracts will illustrate his judgment in regard to the same: "Wie Sie schon in Ihrem werthen Schreiben 'vermuthen, ist es ein Botryosporium. . . . Was die Art anbetrifft, so scheint sie mir am meisten mit Botryosporium pulchellum R. Maire übereinzustimmen. Wie bei dieser Art sind die Hauptfäden der Conidien-träger einfach, 'ramulis acropetis, simplicibus, *apice inflatis*, 4-6-tuberculatis, tuberculis capita triloba gerentibus.' Alles dieses stimmt genau, und Saccardo hebt noch

Puccinia lateripes B. & Rav.

als characteristisch für die Art die: Hyphae primaria simplex und den habitus cupressiformi hervor." I will venture to include Maire's name in the list of synonyms, since if our species is that described by this author, it must also be a synonym of Corda's species.

I may also add that Mons. le Prof. C. A. J. A. Oudemans, of Brussels, took our species for a republication of his, but in a subsequent letter notified me that he regarded ours (and his) as Corda's species, a judgment approved, so he stated, by the eminent mycologist Mons. P. A. Saccardo.

I am indebted to Professor Morgan and others for most of the items in the following which is perhaps the complete synonomy to the present time:

1. Botryosporium pulchrum Corda, Prachtflora, 1839.
2. Botryosporium elegans Corda, Anleitung. 1842.
3. Cephalosporium elegans Bonorden, Handb. 1851.
4. Phymatotrichum pyramidale Bonorden, Handb. 1851.
5. Botryosporium pyramidale Costantin, Mus. 1888.
6. Botrytis longibrachiata Oudemans, Microm. 1890.
7. Botrytis (Polyactis) doryphora Pound & Clements, Bot. Surv. Nebr. III. Rep. 1893. 1894. [Phymatotrichum doryphora Pound & Clements in herb.]
8. Botryosporium pulchellum R. Maire, Bull. Soc. Sci. Nancy, 1900.
9. Cephalosporium dendroides Ell. & Kellerm., Jour. Mycol. 1903.

PUCCINIA LATERIPES B. & RAV. AN AUT-EU-PUCCINIA.

W. A. KELLERMAN.

It has been assumed hitherto that the pycnidial and æcidial stages as well as the uredo and teleutospores, occurring on Ruellia strepens, were the polymorphic forms of one and the same species of Puccinia. Cultures were instituted to determine the correctness of this view.

In late winter at an opportune time roots of Ruellia strepens were removed to the greenhouse. Old stems and leaves infected with the Rust were at the same time afforded like opportunity to absorb heat which presumably would render the spores viable when wanted for inoculations. The experiments were carried on as related below.

After the plants had resumed their vegetative activity and shoots a few inches long had developed (March 5th), some soil together with the partially decayed leaves adjacent to the stems, exposed in the natural habitat all winter, was placed around and

in contact with them to induce natural infection (Expt. No. 79). It was presumed that the spores adjacent to the growing shoots might germinate and infect the host. Such proved to be the case. Spermogonia appeared at the base of the shoots in two of the pots March 23. A week later the characteristic æcidia appeared.

Artificial infection in the usual way was also practiced. The teleutospores exposed all winter on stems of Ruellia strepens were sown on plants in the greenhouse March 25 (Expt. No. 81). Spermogonia appeared April 2, and æcidia followed in abundance April 10. These were mainly on the upper leaves on which the sowings were made.

Æcidiospores obtained in Experiments 79 and 81 were used to inoculate plants of Ruellia strepens reserved for this purpose. This experiment (No. 138) was successful, in the usual time the uredospores and teleutospores appearing in great abundance. No plants besides those used in the above experiments, though adjacent, exhibited any of the stages of the Rust. From all of the foregoing it is experimentally demonstrated that this species is an Aut-eu-puccinia.

With the assistance of Mr. J. G. Sanders and Miss Clara G. Mark I am able to illustrate this species; see Plate II. A few notes are also added.

The pycnidia and æcidia on the stems cause usually a slight distortion, the tissues of the affected part of the host becoming slightly hypertrophied. Fig. 1 shows such a case; this was sketched from an artificially infected plant. The distortion in consequence of slight hypertrophy in leaves is much less except when the midrib is attacked—in which case the curvature may be greater than that of the stems. The affected areas of the leaves are usually more restricted; the spots are very irregular, mostly angular, usually 3-6 mm. in diameter, the border a greenish yellow. Those of the stem, petiole and midrib are mostly longer 6-15 mm.). The sori are a dirty red-brown color.

The æcidiospores are quite irregular in shape as shown in figure 4. They have thick walls, verrucose on the surface, and are reddish or yellowish-brown in color. A number of our recorded measurements are as follows: 33x15, 26x20, 25x18, 30x19, 24x18, 31x18, 25x20, 35x15, 36x13, 30x22, 30x20 μ.

The sori of the uredo and teleuto stages on the leaves are mostly circular or slightly irregular, $\frac{1}{2}$-1 mm. diameter. They fuse in many cases to considerable extended areas. The sori on the stems are much larger.

The uredospores are brown, echinulate, slightly smaller than the æcidiospores, as these measurements show: 21x18, 21x16, 24x18, 24x16, 30x17, 25x15, 18x18, 25x18, 20x16, 24x17 μ Numerous spores are shown in fig. 5.

The teleutospores are very dark brown (the sori appear black), thick-walled, verrucose, the pedicels 50-65 μ long and 5-8 μ wide. Some spores are shown in fig. 6. Recorded measurements mostly from material obtained by cultures are: 28x21, 26x15, 30x17, 30x18, 29x19, 27x18, 27x21, 28x18, 30x21, 27x18, 27x20, 27x19 μ.

Explanation of Plate II. Puccinia lateripes B. & Rav. Figs. 1-3 natural size; figs. 4-6 magnified 350 diameters. Fig. 1. Portion of stem from culture plant showing sori of pycnidia and æcidia on stem and leaves. Fig. 2. Leaf with uredo and some teleuto sori, obtained by cultures. Fig. 3. Leaf with teleuto sori collected preceding year. Fig. 4. Æcidiospores obtained by cultures. Fig. 5. Uredospores obtained by cultures. Fig. 6. Teleutospores.

THE ALTERNATE FORM OF AECIDIUM HIBISCIATUM.

W. A. KELLERMAN.

An enormous quantity of the Æcidium on Hibiscus moscheutos occurring on the margins of Buckeye Lake, a reservoir eight or nine miles long, located forty miles east of Columbus, afforded good opportunity to study its teleutosporic connection. Several Rusts were likewise very abundant in the immediate vincinity of the clumps of this host. It seemed at first necessary to regard the Puccinia on Carex scoparia as the alternate of the Æcidium but that is doubtless connected with a stage on Erigeron. Then Uromyces burrillii was considered in the case though abundant in a very few places on the Reservoir margins. Cultures instituted gave only negative results, and this clue was necessarily abandoned. Next it was concluded that since Puccinia polygoni-amphibii was present and immediately adjacent to most of the clumps of the Hibiscus, it might be the missing link, but unsuccessful cultures effectually demonstrated the erroneous supposition.

Success with cultures was attained at last when the next probability was more seriously laid hold of, namely, that Puccinia muhlenbergiæ Arthur might be the teleutosporic stage in question. Host plants had been early placed in the green house, March 20, and tardily resumed active growth furnishing excellent host plants for the operations. Likewise the Rust was placed in the same congenial temperature and the pre-season experiments could then be carried on with assurance of success if the suspected connection was not improperly guessed.

Sowings were made April 24 (Exp. No. 146) on Hibiscus moscheutos using the teleutospores of Puccinia muhlenbergiæ

Arth. from Muhlenbergia mexicana. On May 5 a few spermogonia appeared and a few days later the numerous clusters became very conspicuous. Æcidia in fair numbers appeared May 15. This experiment seemed from the first appearance of the spermogonia to be conclusive, yet it was deemed best to repeat it on a larger scale. Accordingly three thrifty large plants and two transplanted somewhat later and only pushing out the shoots half an inch, the leaves not yet unfolded, were carefully inoculated (Exp. No. 161) with teleutosporic material similar to that used in the first experiment. On May 13 the spermogonia appeared and at this writing all of the leaves of the five plants inoculated are highly colored with the myriads of spermogonia and æcidia, and a few of them are partially aborted from the presence of the parasite.

Cæoma Æcidium hibisciatum was described by Schweinitz in 1834 (Trans. Am. Phil. Soc. Philadelphia, 4:239). The Puccinia in question, rather common throughout Eastern United States, was called Puccinia windsoriæ and Puccinia dochmia. Dr. Arthur has shown that these two names apply to different species of Rusts—the former designating a Puccinia that belongs to Tricuspis (Triodia), and the latter having as its host the species of Muhlenbergia. But he separated the Rust in question from Puccinia dochmia and proposed the name Puccinia muhlengergiæ Arth., Bull. Lab. Nat. Hist. State Univ. Iowa, 5:317. Oct. 1902.

It therefore becomes necessary to make a new combination as shown in the following paragraph which also recapitulates the synonomy:

PUCCINIA HIBISCIATUM (Schw.) Kellerman n. n.
Æcidium hibisciatum Schw. 1834.
Puccinia windsoriæ Burr. non Schw. 1885.
Puccinia muhlenbergiæ Arth. 1902.

OHIO FUNGI. FASCICLE VII

W. A. KELLERMAN, OHIO STATE UNIVERSITY.

List of Species and Hosts.

121. Aecidium grossulariæ (Pers.) Schm., on Ribes cynosbati L.
122. Albugo candidus (Pers.) Kuntze., on Bursa bursa-pastoris (L.) Britt.
123. Cercospora maianthemi Fckl., on Unifolium canadense (Desf.) Greene.
124. Cladosporium herbarum (Pers.) Link., on Ampelopsis tricuspidata Sieb. & Zucc.
125. Corticium oakesii B. & C., on Ostrya virginiana (Mill.) Willd.
126. Hydnum coralloides Scop., on Beech logs.

127. Hydnum erinaceus Bull., on rotten logs.
128. Puccinia cirsii-lanceolati Schroet., on Carduus lanceolatus L.
129. Puccinia helianthi Schw., on Helianthus decapetalus L.
130. Puccinia lateripes B. & R., teleutospores, on Ruellia strepens L.
131. Puccinia lateripes B. & R., æcidiospores, on Ruellia strepens L.
132. Puccinia violæ (Schum.) DC., on Viola striata Ait.
133. Ramularia barbareæ Pk., on Barbareæ barbareæ (L) McM.
134. Ramularia variabilis Fckl., on Verbascum thapsus L.
135. Ramularia arvensis Sacc., on Potentilla monspeliensis L.
136. Septoria erigeronis Pk., on Erigeron annuus (L.) Pers.
136. Septoria lycopersici Speg., on Lycopersicon lycopersicon (L.) Karst.
138. Septoria scrophulariæ Pk., on Scrophularia marylandica L.
139. Stereum sericeum (Schw.) Fr., on Carpinus caroliniana Walt.
140. Uromyces trifolii (Hedw.) Lev., on Trifolium pratense L.

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121. Aecidium grossulariae (Pers.) Schum.

Spermogonia only.

On Ribes cynosbati L.

Columbus, Ohio. May 9, 1902.

Coll. W. A. Kellerman.

Supplement to No. 81.

122. Albugo candidus (Pers.) Kuntze.

On Bursa bursa-pastoris (L.) Britt.

Columbus, Ohio. May 9, 1903.

Coll. W. A. Kellerman.

Supplement to No. 63.

123. Cercospora maianthemi Fckl.

On Unifolium canadense (Desf.) Greene.

(Maianthemum canadense Desf.)

West Mansfield, Logan Co., O. June 10, 1902.

Coll. W. A. Kellerman.

"C. Majanthemi. — F. rh. 1631. — Cæspitibus in marculis exaridis, punctformibus, gregariis, cinereo-viridibus; hyphis erectis, continuis, simplicibus, flexuosis, crassis, multiguttulatis, fuscis; conidiis linearibus, multiseptatis fuscescentibus, sæpe curvatis.

"An der unteren Fläche noch lebender Blätter von Majanthemum bifolium, selten, im Sommer. Im Jura von Morthier gesammelt." L. Fuckel, Symbolæ Mycologicæ, 353. 1869.

124. Cladosporium herbarum (Pers.) Link.

On old stems of Ampelopsis tricuspidata Sieb. & Zucc.

Columbus, Ohio. March 20, 1903.

Coll. W. A. Kellerman.

"DEMATIUM HERBARUM: Effusum compactum virescente-olivaceum pulverulentum.

"In caulibus plantarum maiorum, colore læte olivaceo distinguitur.

"Byssus cæspitosa." D. C. H. Persoon, Synopsis Methodica Fungorum, 699. 1801.

122. Corticium oakesii B. & C.

On Ostrya virginiana (Mill.) Willd.

Columbus, Ohio. Sept. 8, 1902.

Coll. F. J. Tyler.

"PEZIZA AMORPHA: Sparsa subcoriacea majuscula sessilis, cupulis orbicularibus subeffusisque: disco planiusculo rufo, externe tomentoso-albidis.

"Peculiarem hanc speciem *Thelephoris* subaffinem mihi misit Dom. *Ludwig*. Lin. 1-2 lata. *Cupulae* nonnullae longitudinaliter in unc. unam confluunt." D. C. Persoon, Synopsis Methodica Fungorum, 657. 1801.

126. Hydnum coralloides Scop.

On Beech logs.

Westerville, Franklin Co., O. Oct. 22, 1902.

Coll. J. G. Sanders.

"Clavaria ramosa; extremis ramulis teretibus, subulatis, recta deorsum descendentibus."

"Habitat in udis putridisque lignis. Octobri M."

"Stipes cum trunco, cui innascitur angulum reductum constituit, ultimi vero ramuli cum eodem trunco paralleli sunt Erinaceorum aculeis simillimi, and forte eusdem Gentis." J. A. Scopoli, Flora Carniolica, 61. 1760.

127. Hydnum erinaceus Bull.

On rotten logs.

Columbus, Ohio. Oct. 15, 1902.

Coll. Modesto Quiroga.

"Hydne Hérisson. Hydnum erinaceus.

Hydnum majus, convexum è candido-flavicans nec coriaceum; aculeis longissimis, gradatim dependentibus.

"In quercubus vivis parasitat; ut plurimum sessile; interdum in formam stipitis lateralis plus minus elongati, fig. A, gracilescens.

Agaricus barbatus flavescens. Buxb. Cent. I. 35. Tab. 56. Fig. 1.

Caract. Spécif. L'Hydne Hérisson est une des plus grandes espèces de ce genere; il est convexe, blanc d'abord, jaunâtre ensuite; sa base charnue et tendre est hérissée de longs aiguillons qui pendent tous parallèlement et se terminent per étages." Pierre Bulliard, Histoire des Champignons de la France, 1:304. Pl. 34. 1791.

128. Puccinia cirsii-lanceolati Schroet.

On Carduus lanceolatus L.

Lakeside, Ottawa Co., O. Sept. 21, 1902.

Coll. W. A. Kellerman.

"P. Cirsii lanceolati n. sp. Aecidien in kleinen Gruppen zusammengestellt. Pseudoperidien sehr locker gefügt, weit becherförmig. Sporen elliptisch mit farbloser, feinwarziger Membran und hell orange-rothem Inhalt. Uredo in rundlichen, kastanienbraunen Häufchen. Sporen kugelig, elliptisch oder eiförmig, 24-30μ lang, 20-25μ breit; Membran kastanienbraun, feinstachlig, an den Seiten mit 3, bei Befeuchten stark aufquellenden Keimporen. Teleutosporen in den Uredo-Häufchen auftretend, oder alleinstehend in schwarzbraunen Häufchen, elliptisch, nach unten abgerundet oder etwas verschmälert, in der Mitte wenig oder gar nicht eingeschnürt, 33-42μ lang, 22-26μ breit; Membran dunkel kastanienbraun, glatt, am Scheitel etwas verdickt und oft in eine flache kappenförmige Spitze verschmälert." J. Schroeter, Kryptogamen-Flora von Schlesien, Pilze, 3^1:317. 1889.

129. Puccinia helianthi Schw.

On Helianthus decapetalus L.

Buckeye Lake, Licking Co., Ohio. Oct. 23, 1902.

Coll. W. A. Kellerman.

Supplement to No. 10.

130. Puccinia lateripes B. & R.

On Ruellia strepens L.

Columbus, Ohio. September 1902.

Coll. W. A. Kellerman.

"Puccinia lateripes. B. & R.

"Epiphylla maculis flavis vel nullis; sporis brevibus utrinque obtusis pedicello longo flexuoso laterali.

"On leaves of *Ruellia*. Car. Inf. Ravenel. No. 1641.

"Spots yellow or quite obsolete; sori scattered; spores short, obtuse at either end, almost horizontal, with a long lateral flexuous stem." M. J. Berkeley, Grevillea, 3:52. December 1874.

131. Puccinia lateripes B. & R.

Æcidia only.

On Ruellia strepens L.

Columbus, Ohio. June 22, 1902.

Coll. W. A. Kellerman.

Supplement to No. 130.

132. Puccinia violae (Schum.) DC.

Æcidium.

On Viola striata Ait.

Columbus, Ohio. May 5, 1903.

Coll. J. G. Sanders.

"Ae. Violæ, orbiculare vel oblongum vel solitarie sparsum flavum, peridiis cupularibus flavis, ore dentato erecto pulvere aurantiaco.

"Congestum in foliis, solitarie et sparsum in petiolis Violæ caninæ. Eestate." Schumacher, Enumeratio plantarum in partibus Sællandiæ, 2:224. 1803.

133. Ramularia barbareae Pk.

On Barbarea barbarea (L.) McM.

Columbus, Ohio. May 8, 1903.

Coll. W. A. Kellerman.

"Ramularia barbareæ n. sp.

"Spots suborbicular, arid, white, generally bordered by a slightly thickened brown line; flocci amphigenous, either short and branched or long and simple; spores oblong or cylindrical, often catenulate, rarely uniseptate, .0004 to .0009 inch long, .00012 to .00016 broad." Charles H. Peck, Annual Report of the New York State Museum of Natural History, 1886, 40:63. 1887.

134. Ramularia variabilis Fckl.

On Verbascum thapsus L.

Columbus, Ohio, May 2, 1903.

Coll. W. A. Kellerman.

"R. variabilis.—F. rh. 135. pr. p. (unter Oidium Fusisporioides).—Cæspitibus laxis, tenuibus, candidis, in macula subfusca virescentive; hyphis fasciculatis, flexuosis, brevissimis; conidiis valde variis, ovatis, obovatis, ellipticis cylindraceisve, hyalinis."

"An den Blattern von Verbascum Thapsus und Digitatis purpurea, haufig, im Herbst." L. Fuckel, Symbolæ Mycologicæ, 361. 1869.

135. Ramularia arvensis Sacc.

On Potentilla monspeliensis L.

Columbus, Ohio. May 8, 1903.

Coll. W. A. Kellerman.

"Ramularia arvensis Sacc. F. it t. 1000—Maculis subcircularibus albicantibus, rubro-marginatis, minutis; hyphis epiphyllis fasciculatus subsimplicibus, continuis, hyalinis, denticulatis; conidiis cylindraceis, continuis v. 1—septatis, 22-26 x 2.5-4, breve catenulatis, hyalinis." P. A. Saccardo, Michelia, 2:548. 1882.

136. Septoria erigerontis Pk.

On Erigeron annuus (L.) Pers.

Columbus, Ohio. May 19, 1903.

Coll. W. A. Kellerman.

"Septoria Erigeronis n. sp.

"Spots small, orbicular, distinct, rarely confluent, arid, surrounded by a dark brown or blackish line; perithecia minute, black on the upper surface of the leaf; spores thread-shaped, simple, 1/1000′ long or more.

"Leaves of *Erigeron annuum*. Greenbush. July. The spots are 1″-2″ in diameter." Charles H. Peck, Annual Report of the New York State Cabinet of Natural History, 1871, 24:87. 1873.

137. Septoria lycopersici Speg.

On Lycopersicon lycopersicon (L.) Karst.

Columbus, Ohio. Aug. 2, 1903.

Coll. W. A. Kellerman.

"SEPTORIA LYCOPERSICI Speg. (n. sp.)

Diag. Maculæ magnæ sæpe totum folium occupantes, sordide fusco-cinerascentes, subindeterminatæ; perithecia sparsa sæpius hypophylla, lenticulari-hemisphærica, prominula, atra, membranacea, contextu parenchymatico, olivaceo; spermatia bacillari-cylindracea v. bacillari-subclavulata majuscula (70-110 x 3), 3-pluriseptata, utrinque obtusiuscule attenuato-rotundata, hyalina.

Hab...In foliis languidis *Solani lycopersici* in hortis, Boca del Riachuelo, Maj. 1881." Auctore Carolo Spegazzini, Fungi Argentini, Pugillus quartus, 115. 1882.

138. Septoria scrophulariae Pk.

On Scrophularia marylandica L.

Columbus, Ohio. May 9, 1903.

Coll. W. A. Kellerman.

"Septoria Scrophulariæ *n. sp.*

"Spots small, arid, whitish, surrounded by a purplish-brown border; perithecia few, on the upper surface; spores filiform, curved, hyaline, .001′-.0016′ long." Charles H. Peck, Annual Report of the New York State Museum of Natural History, 1889, 40:57.

139. Stereum sericeum (Schw.) Fr.

On Carpinus caroliniana Walt.

Columbus, Ohio. Oct. 17, 1902.

Coll. W. A. Kellerman.

"Thelephora sericea Sz.

"T. minor sessilis orbiculata repanda papyracea confluens sericea candida, hymenio pallide fuscescente substriato, papillis minutis.

"Frequens ad ramulos emortuos juniores. Orbiculata, centro affixa. Pileus sericeus, nitens, strigositate arcte appressa." L. D. de Schweinitz, Synopsis Fungorum Carolinæ Superioris, 80. 1822. [Excerpt, Schrift. d. Nat. Gesellschaft zu Leipzig.] z

140. Uromyces trifolii (Hedw.) Lev.

Uromyces trifolii (Hedw.) Lev.

On Trifolium pratense L.

Columbus, Ohio. Nov. 4, 1902.

Coll. W. A. Kellerman and Jas. McOwen, Jr.

"Puccinie des trefles. Puccinia trifolii.
"Puccinia trifolii. Hedw. f. Fung. ined. t. 18.
"Cette espèce est intermédiaire entre les puccinies et les uredo; elle attaque les tiges, les pétioles, les nervures et les deux surfaces des feuilles; elle boursoufle, défigure, recroqueville souvent les organes sur lesquels elle croît et empêche le trefle de fleurir; ses taches sont oblongues ou irrégulières, bordées ou couvertes par les débris de l'épiderme déchire; la poussière est d'un brun roux, composée de globules ovoides portês sur un pédicelle excessivement court, et qui est quelquefois oblieéré. J'ai trouvé cette espèce dans un pré ombragé, près Fontenai-aux-Roses: elle croît sur le trefle filiforme et le trefle hybride." DeCandolle, Flore Francaise, 2:225. 1815.

Correction, May 28, 1903.

82. Puccinia hibisciatum (Schw.) Kellerm.

Æcidium hibisciatum Schw.

Correction, May 28, 1903.

108. Puccinia hibisciatum (Schw.) Kellerm.

Puccinia muhlenbergiæ Arth.

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ACACIA emarginata, host to Pyropolyporus robiniæ Murrill n. sp. Bull. Torr. Bot. Club, 30:115. Feb. 1903.

ACACIA farnesiana, pods, host to Ravenelia siliquæ Long n. sp. Bot. Gaz. 35:118. Feb. 1903.

ACAROSPORA epilutescens A. Zahlbr. n. sp., ad saxa granitica. Beihefte z. Bot. Centralbl. 13:161. 1902.

ACAROSPORA obpallens (Nyl.) A. Zahlbr. n.n. [Lecanora obpallens Nyl.] Beihefte z. Bot. Centralbl. 13:161. 1902.

ACAROSPORA peltastica A. Zahlbr. n. sp., ad saxa granitica. Beihefte z. Bot. Centralbl. 13:161. 1902.

ACAROSPORA reagens A. Zahlbr. n. sp., ad terram nudam. Beihefte z. Bot. Centralbl. 13:161. 1902.

ACER glabrum (?), wood, host to Ophiogloea linospora Clements n. sp. Bull. Torr. Bot. Club, 30:87. Feb. 1903.

AECIDIUM,The, as a Device to Restore Vigor to the Fungus. J. C. Arthur. Proc. 23d. An. Meeting Soc. Prom. Agr. Sci. 1902: 65-9. Excerpt distrib. Feb. 1903.

AECIDIUM æthusæ Ell. & Ev. N. A. F. Sec. Ser. 3,581, *syn. of Aecidium leptotaeniae q. v.*

AECIDIUM asteratum Schw. [on Aster spp.], syn of Puccinia caricis-asteris Arth, n. sp. Jour. Mycol. 8:54. June 1902.

AECIDIUM delphinii Barthol. n. sp., on leaves of Delphinium scopulorum. Jour. Mycol. 8:173. Dec. 1902.

AECIDIUM ellisii Tr. & Gall., alternate form of Puccinia subnitens Dietl. [Arthur.] Bot. Gaz. 35:20. Jan. 1903.

AECIDIUM erigeronatum, *see Caeoma (Ae.) erigeronatum.* . .

AECIDIUM grindeliæ Griff. (Bull. Torr. Bot. Club, 29:299. May 1902), synonym of Aecidium grindeliæ Syd. (Hedwigia, Beiblatt, 40:(1). Feb. 1901.) Ann. Mycolog. 1:20. Jan. 1903.

AECIDIUM impatientis Schw., alternate form of Puccinia rubigovera Auct. on Elymus virginicus L., and synonym of Puccinia impatientis (Schw.) Arthur n.n. [Arthur.] Bot. Gaz. 35:19. Jan. 1903.

AECIDIUM jamesianum Pk., alternate form of Puccinia bartholomæi Diet., synonym of Puccinia jamesiana (Pk.) Arthur n.n. Bot. Gaz. 35:18. Jan. 1903.

AECIDIUM leptotaeniæ Lindroth n. sp. (syn. Aecid. æthusæ Ell. & Ev. N. A. F. Sec. Ser. 3,581), in foliis, caulibus, fructibus Leptotœniæ multifida. Meddel. fr. Stockholms Högskolas botaniska Institut. Bd. IV. 1901.

AECIDIUM œnotheræ, *syn. of Puccinia peckii q. v.* . .

AECIDIUM pammelii Trel., alternate form of Puccinia panici Diet. [Culture expt. William Stuart.] Proc. Ind. Acad. Sci. 1901: 284. 1902.

AECIDIUM peckii DeToni, *syn. of Puccinia peckii q. v.*

AECIDIUM plantaginis Ces., alternate form of Uromyces aristidæ E. & E. [Arthur.] Bot. Gaz. 35:17. Jan. 1903.

AECIDIUM ranunculacearum (?) on Anemone canadensis L., alternate form of Puccinia simillima Arth. [Arthur.] Bot. Gaz. 35:20. Jan. 1903.

AECIDIUM sambuci Schw., *syn. of Puccinia sambuci q. v.*

AECIDIUM smilacis Schw., alternate form of Puccinia amphigena Diet. [Cultures, Arthur.] Bot. Gaz. 35:20. Jan. 1903.

AECIDIUM solidaginis Schw., alternate form of Puccinia caricis-solidaginis Arth. n. n. Bot. Gaz. 35:21. Jan. 1903.

AECIDIUM verbenicolum Kell. & Sw., *syn. of Puccinia verbenicola q. v.*

ALLOPHYLARIA senecionis Clements n. sp., in caulibus emortuis Senecionis blitoidis. Bull. Torr. Bot. Club, 30:88. Feb. 1903.

ALTHÆA rosea Cav., host to Cercospora kellermani Bubak n. sp. Jour. Mycol. 9:3. Feb. 1903.

ALWOOD, Wm. B. On the Behavior of Certain Yeast Organisms in Pure and Mixed Cultures. [Abstract.] Science, N. S. 17:260. 13 Feb. 1903.

AMANITA phalloides striatula Peck n. var. N. Y. State Mus. Bull. 54:96. Nov. 1902.

AMYGDALUS persica, dead limbs, host to Sphæropsis persicæ E. & B. n. sp. Jour. Mycol. 8:175. Dec. 1902.

ANEMONE cylindrica L., host to æcidia of Puccinia simillima Arth. [Arthur.] Bot. Gaz. 35:20. Jan. 1903.

ANEMONE multifida, host to Puccinia suffusca Holway. Jour. Mycol. 8:171. Dec. 1902.

ANEMONE narcissiflora, host to Puccinia retecta Syd. n. sp. Ann. Mycolog. 1:34. Jan. 1903.

ANEMONE parviflora, host to Puccinia suffusca Holway. Jour. Mycol. 8:171. Dec. 1902.

ANTHEPHORA elegans, host to Uredo anthephoræ Syd. n. sp. Ann. Mycolog. 1:22. Jan 1903.

APLOPAPPUS spinulosus, host to Puccinia aplopappi Syd. n. sp. Monogr. Uredin. 1:8. 30 June 1902.

APLOPAPPUS squarrosus, host to Puccinia aplopappi Syd. n. sp. Monogr. Uredin. 1:8. 30 June 1902.

APPLE tree, decorticated limbs, host to Stagonospora biformis E. & B. n, sp. Jour. Mycol. 8:176. Dec. 1902.

ARRACACHA multifida, host to Puccinia imperspicua Syd. n. sp. Monogr. Ured. 1:361. 15 Nov. 1902.

ARTHONIA lecanactidea A. Zahlbr. n. sp., ad corticem ramulorum Lycii californici. Beihefte z. Bot. Centralbl. 13:155. 1902.

ARTHONIA rhoidis A. Zahlbr. n. sp., ad corticem ramulorum Rhoidis laurinæ. Beihefte z. Bot. Centralbl. 13:156. 1902.

ARTHOPYRENIA (sect. Anisomeridium) parvula A. Zahlbr. n. sp., ad corticem Umbellulariæ. Beihefte z. Bot. Centralbl. 13:149. 1902.

ARTHUR, J. C. The Aecidium as a Device to restore Vigor to the Fungus. Proc. 23d Ann. Meeting Soc. Prom. Agr. Sci. 1902: 65-9. Excerpt distrib. Feb. 1903.

ARTHUR, J. C. Cultures of Uredineæ in 1902. Bot. Gaz. 35:10-23. Jan. 1903.

ARTHUR J. C. Problems in the Study of Plant Rusts. [Presidential address, Botanical Society of America.] J. C. Arthur, Bull. Torr. Bot. Club, 30:1-18. Jan. 1903.

ARTHUR, J. C. and Holway, E. W. D. The American Uredineæ, IV. Bull. Lab. Nat. Hist. State Univ. Iowa, 5:311-334. pl. 1-9. Oct. 1902.

ARTHUR, J. C. and Holway, E. W. D. Uredineæ Exsiccatæ et Icones. Fascicle IV. [Species 45-60, 49 packets, photo-engraved drawings and heliotype reproductions from photographs.] Dec. 1902.

ASCOMYCETUM, Nova, Genera Speciesque, *see Nova.* . . .

ASPERGILLUS cucurbitaceus Curtis in Herb. syn. of *Choanephora cucurbitarum, q. v.*

ASPERGILLUS niger [used in the study of the endo-enzyme Inulase Dean.] Bot. Gaz. 35:24-35. Jan. 1903.

ASPERGILLUS oryzæ, conidia, *see Germinative power.* . . .

Ass dung, host to Cephaliophora tropica Thaxter, n. sp., Bot. Gaz. 35:158. March 1903.

ASTER multiflorus, host to Camarosporium astericolum E. & B. n. sp. Jour. Mycol. 8:176. Dec. 1902.

ASTEROCONIUM Syd. n. gen. [Melanoconiacæ.] Ann. Mycolog. 1:36. Jan. 1903.

ASTEROCONIUM saccardoi Syd. n. sp., in foliis vivis Litsæ glaucescentii, Ann. Mycolog. 1:36. Jan. 1903.

ATKINSON, Geo. F. A New Species of Calostoma. Jour Mycol. 9:14-17. Feb. 1903.

BACTERIA, Flies as Carriers of. [A Laboratory Study]. Eva May Shoemaker and Alvin Waggoner. School Science, 3:16-20. April 1903.

BACTERIA of the Soil in their Relation to Agriculture. Frederick D. Chester. Penn. Dept. Agr. Bull. 98:1-88. 1902.

BIOLETTI, Frederick T. Brown Rot of Stone Fruits. [Monilia fructigena. Circular issued Jan. 1901.] Rep. Agr. Exp. Sta. Univ. Calif. 1898-1902:330-3. 1902.

BIOLETTI, F. T. Olive Diseases. [Sooty Mold, Cycloconium oleaginum, etc.] Rep. Agr. Exp. Sta. Univ. Calif. 1898-1901:305-7. 1902.

BIRCH (?), limbs, host to Exosporium cespitosum E. & B. n. sp. Jour. Mycol. 8:178. Dec. 1902.

BIRCH, much decayed wood, host to Pleurotus minutus Peck n. sp. N. Y. State Mus. Bull. 54:949. Nov. 1902.

BITTER-ROT fungus, Glœosporium fructigenum Berk. [evanescent asci found in the apple cankers, reported by Hermann von Schrenk, Acad. Sci. St. Louis.] Science, N. S. 17:186. 30 Jan. 1903.

BLACK ROT, effect on Turnips, *see Rot, Black.* . . . .

BLIGHT, Pear, *see Pear Blight.* . . . .

BLIGHT, Plum, Studies upon. [General characters, inoculation with twig blight of pears and apples into pear shoots successful, into plum shoots unsuccessful.] L. R. Jones. Centralblatt f. Bakt. Par. u. Infektionskr. Zweite Abt. 9:835-841. 15 Dec. 1902.

BLUE Color of Coniferous Timber, *see Ceratostomella pilifera.*

BOLBITIUS glatfelteri Peck n. sp., gregarious or cespitose on rotted manure. Bull. Torr. Bot. Club, 30:97. Feb. 1903.

BOLETINUS ravenelii (B. & C.) Earle n. n. [Boletus ravenelii B. & C.] Contrib. U. S. Nat. Herb. 6:216. 31 July 1901.

BOLETINUS sublutens (Peck) Earle n. n. [Boletus sublutens Peck.] Contrib. U. S. Nat. Herb. 6:216. 31 July 1901.

BOLETUS betula and B. russellii. [Can be easily distinguished.] W. G. Farlow. Lloyd's Mycological Notes, [191.] No. 11:105. Dec. 1901.

BOLETUS chrysenteron deformans Peck n. var., bare earth on sloping banks by roadside. N. Y. State Mus. Bull. 54:966. Nov. 1902.

BOLETUS multipunctus Peck n. sp., in woods. N. Y. State Mus. Bull. 54:952. Nov. 1902.

BOLETUS ravenelii B. & C., *syn. of Boletinus ravenelii q. v.* . .

BOLETUS russellii and B. betula, *see Boletus betula* . .

BOLETUS sublutens Peck, *syn. of Boletinus sublutens q. v.* . . .

BOLLEY, H. L. The Use of the Centrifuge in Diagnosing Plant Diseases. Proc. 23rd. An. Meeting Soc. Prom. Agr. Sci. 1902:82-5, 1902.

BOTRYODIPLODIA gossypii E. & B. n. sp., on dead stems of Gossypium herbaceum. Jour. Mycol. 8:175. Dec. 1902.

BOUVARDIA leiantha, host to Uromyces bouvardiæ Syd. n. sp. Ann. Mycolog. 1:16. Jan. 1903.

BOVISTA [Description of Genus and 8 species pl. 1-4.] Llyod's Mycological Notes [201-9], No. 12:114-8. Dec. 1902.

BOVISTA candida Schw. *syn. of Disciseda circumscissa q. v.* . . .

BOVISTA circumscissa B. et C.,*syn. of Disciseda circumscissa, q. v.*

BOVISTA dealbata Lloyd, *syn. of B. tomentosa Vitt.* (B. minor Morgan) [sec. Dr. Hollos]. Lloyd's Myc. Notes, [223.] No. 13:127. Feb. 1903.

BOVISTA subterranea Peck, *syn. of Disciseda debreceniensis q. v.*

BOVISTAE [Description and Generic Classification.] Lloyd's Mycological Notes [200] No. 12:113-14. Dec. 1902.

BOVISTAE, Key to three Genera. Lloyd's Mycological Notes [200] No. 12:114. Dec. 1902.

BRANCH, old, host to Dasyscypha rubrifulva Clements n. sp. Bull. Torr. Bot. Club, 30:89. Feb. 1903.

BRANCH, old, host to Scytopezis stellata Clements n. sp. Bull. Torr. Bot. Club, 30:87. Feb. 1903.

BRANCHES, old and decorticated, host to Pleospora sepulta Clements, n. sp. Bull. Torr. Bot. Club, 30:85. Feb. 1903.

BRONGNIARTIA, host to Pleoravenelia similis Long n. sp.. Bot. Gaz. 35:128. Feb. 1903.

BROWN, Chas. E. and Fernekes, Valentine. Contributions toward a list of Milwaukee County Fungi. Bull. Wisc. Nat. Hist. Soc. 2:45. 1902.

BROWN Disease of Potatoes, [Stysanus stemonites.] Charles E. Bessey, Science, N. S. 15:274. 14 Feb. 1902.

BROWN Rot Disease of the Redwood. Hermann von Schrenk, U. S. Dept. Agr. Bureau of Forestry, Bull. 38:29-31. Pl. 10-11. 1903.

BUBAK, Fr. Bemerkungen ueber einige Puccinien. [Puccinia fusca, P. pulsatillæ.] Beiblatt z. Hedwigia, 42:(28)-(32). Jan.-Feb. 1903.

BUBAK, Francis. Zwei neue Pilze aus Ohio. Jour. Mycol. 9: 1-3. Feb. 1903.

BULL Pine, *see Pinus ponderosa* . . .

CÆOMA (Ædidium) erigeronatum Schw., *syn. of Puccinia caricis-erigerontis, q. v.*

CALOSTOMA, a new species of. Geo. F. Atkinson. Jour. Mycol. 9:14-17. Feb. 1903.

CALOSTOMA microsporum Atkinson n. sp. Jour. Mycol. 9:16. Feb. 1903.

CAMAROSPORIUM astericolum E. & B. n. sp., on dead stems of Aster multiflorus. Jour. Mycol. 8:176. Dec. 1902.

CARLETON, Mark Alfred. Culture Methods with Uredineæ. Jour. Appl. Micros. & Lab. 6:2109-14. Jan. 1903.

CARVER, G. W. Some Cercosporæ of Macon Co., Alabama. [List. Reprint from Proc. Iowa Acad. Sci. 7:161-165, 1900]. Tuskegee Exp. Sta. Bull. 4:1-8. Jan. 1901.

CASTILLEIA pallida, host to Leptosphæria castilleiæ Clements n. sp. Bull. Torr. Bot. Club. 30-85. Feb. 1903.

CATASTOMA, Key to the Species of, [Lloyd.] Myc. Notes [214] No. 13:121. Feb. 1903.

CATASTOMA circumscissa (B. et C.) Holl., *syn. of Disciseda circumscissa, q. v.*

CATASTOMA pedicellatum Morg., syn. of Disciseda pedicellata (Morg.) Holl. Beiblatt z. Hedwigia, 42:(22). Jan.-Feb. 1903.

CATASTOMA subterraneum (Peck) Morg., *syn. of Disciseda debreceniensis, q. v.*

CELASTRUS scandens, host to Diaporthe celastrina E. & B. n. sp. Jour. Mycol. 8:173. Dec. 1902.

CEPHALIOPHORA Thaxter, n. gen. [Hyphomycetes]. Bot. Gaz. 35:157. March 1903.

CEPHALIOPHORA irregularis Thaxter n. sp., on mouse dung. Bot. Gaz. 35:158. March 1903.

CEPHALOSPORIUM, a new species of. W. A. Kellerman. Jour. Mycol. 9:5. Feb. 1903.

CEPHALOSPORIUM dendroides Ell. & Kellerm. n. sp. on dead herbaceous stems in the green house. Jour. Mycol. 9:5. Feb. 1903.

CEPHALOTHECIUM roseum, *see Parasitism of* . . .

CEPHALOTHECIUM roseum Cda., *see Rot, Apple, A Destructive.*

CERATOSTOMELLA pilifera, [Cause of Blue Color of Coniferous Timber. Hermann von Schrenk.] Science, N. S. 17:458. 20 March, 1903.

CERCOSPORA crotonicola E. & B. n. sp., on leaves of Croton fruticulosus. Jour. Mycol. 8:177. Dec. 1902.

CERCOSPORA kellermani Bubak, n. sp., on Althæa rosea Cav. Jour. Mycol. 9:3 Feb. 1903.

CERCOSPORA ratibidæ E. & B. n. sp., on Ratibida columnaris. Jour. Mycol. 8:17. Dec. 1902.

CERCOSPORA reducta Syd. n. n. [Cercospora sessilis Ell. & Ev.—nec Sorok.] Ann. Mycolog. 1:178. March 1903.

CERCOSPORA sessilis Ell. & Ev. (nec Sorok.), *syn. of C. reducta q. v.*

CERCOSPORA of Macon Co., Alabama, Some. G. W. Carver. [List. Reprint from Proc. Iowa Acad. Sci. 7:161-165, 1900.] Tuskegee Exp. Sta. Bull. 4:1-8. Jan. 1901.

CHÆTOSPHÆRIA thalictri Clements n. sp., in caulibus mortuis Thalictri sparsifloræ. Bull. Torr. Club, 30:83. Feb. 1903.

CHÆTOSTROMA graminis E. & B. n. sp., on dead leaves of some grass. Jour. Mycol. 8:178. Dec. 1902.

CHAMASARACHA nana, host to Puccinia chamasarachæ Syd. n. sp. Monogr. Uredin. 1:263. 15 Nov. 1902.

CHENOPODIUM album L., host to æcidia of Puccinia subnitens Diet. [Cultures. Arthur.] Bot. Gaz. 35:20. Jan. 1903.

CHEPHALIOPHORA tropica Thaxter n. sp., on Mangoose dung; also on ass, rat and mouse dung. Bot. Gaz. 35:158. March 1903.

CHESTER, Frederick D. Bacteria of the Soil in their Relation to Agriculture. Penn. Dept. Agr. Bull. 98:1-88. 1902.

CHESTER, Frederick D. Bacteriological Analysis of Soils. Proc. 23d. An. Meeting Soc. Prom. Agr. Sci. 1902:173-182. 1902.

CHOANEPHORA, A New England. (Mycological Notes, I.) R. Thaxter, Rhodora, 5:97-102. Pl. 46. April 1903.

CHOANEPHORA americana A. Moell., *syn. of Choanephora cucurbitarum q. v.*

CHOANEPHORA cucurbitarum (B. & Rav.) Thaxter n. n. [Rhopalomyces curcurbitarum B. & Rav.; R. elegans var. cucurbitarum March; Aspergillus cucurbitaceus Carter in Herb; Choanephora americana A. Moell.] Rhodora, 5:102. April 1903.

CUCURBITARIA juglandina E. & B. n. sp., on dead limbs of Juglans nigra. Jour. Mycol. 8:174. Dec. 1902.

CULTURE Methods with Uredineæ. Mark Alfred Carleton. Jour. Appl. Micr. & Lab. Meth. 6:2109-2114. Jan. 1903.

CULTURES with species of Rusts [14 failures, 12 confirming results, 7 establishing æcidial and teleutosporic connection — Arthur, in 1902], *see Cultures of Uredineae in 1902.* . .

CULTURES with species of Rusts, *see Kellerman, W. A. Uredinous Infection experiments.* . . .

CULTURES of Uredineæ in 1902. J. C. Arthur. Bot. Gaz. 35:10-23. Jan. 1903.

CUMMING, M. & Harrison, F. C., *see Harrison, F. C.* . . .

CYSTOSPORELLA macrospora Peck n. sp., branches of Cottonwood, Populus deltoides. Bull. Torr. Bot. Club, 30:99. Feb. 1903.

DASYSCYPHA incarnata Clements n. sp., ad lignum decorticatum Piceæ engelmannii. Bull. Torr. Bot. Club, 30:88. Feb. 1903.

DASYSCYPHA rubrifulva Clements n. sp., in ramis vetustis ignotis. Bull. Tor. Bot. Club, 30:89. Feb. 1903.

DEAN, Arthur L. Experimental Studies in Inulase [using pure cultures of Aspergillus niger and Pencillium glaucum]. Bot. Gaz. 35:24-35. Jan. 1903.

DELPHINIUM scopulorum, host to Aecidium delphinii Barthol. Jour. Mycol. 8:173. Dec. 1902.

DERMATEA macrospora Clements n. sp., ad lignum Salicis. Bull. Torr. Bot Club, 30:87. Feb. 1903.

DERMATOCARPON (sect. Endopyrenium) acarosporoides A. Zahlbr. n. sp., ad saxa granitica. Beihefte z. Bot. Centralbl. 13:153. 1902.

DIAPORTHE (Chorostate) celastrina E. & B. n. sp., on dead stems of Celastrus scandens. Jour. Mycol. 8:173. Dec. 1902.

DICAEOMA pulsatillæ Opiz, *syn. of Puccinia putsatillae q. v.* . .

DICLIPTERA sp., host to Uromyces induratus Syd. et Holw., n. sp. Ann. Mycolog. 1:16. Jan. 1903.

DIPLOPHRYS stercorea Ceink., Nuclear and Cell Division in. Edgar W. Olive. [Abstract.] Science, 17:260. 13 Feb. 1903.

DISCISEDA circumscissa (B. & C.) Holl. (Termes zetrajzi Füzetek. XXV. 1902, p. 102-132.) [Synonomy.] Beiblatt zur Hedwigia, 42:(20). Jan.-Feb. 1903.

DISCISEDA debresceniensis (Hazsl.) Holl. (Termes zetrajzi Füzetek. XXV. p. 102-103, 132.) [Synonomy.] Beiblatt zur Hedwigia, 42:(21). Jan.-Feb. 1903.

DISCOMYCETES of the Miami Valley, Ohio. A. P. Morgan. [List, notes, and new species.] Jour. Mycol. 8:179-192. Dec. 1902.

DISEASE, *see Polyporus fraxinophilus, A Disease.* . . .

DISEASE, Brown, of Potatoes, *see Brown Diseases of.* . . .

DISEASE, Cucumber. [Diseases caused by Fungi. Popular account of Anthracnose, Downy Mildew, Timber Rot, Damping Off, and Powdery Mildew.] Hatch. Exp. Sta. Mass. Agr. Coll. Bull. 87:34-40. Feb. 1903.

DISEASE, Fungus, of the Mulberry fruit. [Undescribed species. Abstract.] W. A. Orton. Science, N. S. 17:261. 13 Feb. 1903.

DISEASES, Olive. [Sooty Mold, Cycloconium oleaginum, etc.] F. T. Bioletti. Rep. Agr. Exp. Sta. Univ. Calif. 1898-1901: 305-7. 1902.

DISEASES, Plant, The Use of the Centrifuge in Diagnosing. H. L. Bolley. Proc. 23d An. Meeting Soc. Prom. Agr. Sci. 1902:82-5. 1902.

DOTHIORELLA multicocca E. & B. n. sp., on bark of Populus deltoides. Jour. Mycol. 8:174. Dec. 1902.

DUNG of ass, *see Ass dung.* . . .

DUNG, damp, and wood, host to Plicaria chlorophysa Clements n. sp. Bull. Torr. Bot. Club, 30:92. Feb. 1903.

DUNG of goat, *see Goat dung.* . . .

DUNG of Mangoose, *see Mangoose dung.* . . .

DUNG of mouse, *see Mouse dung.* . . .

DUNG of rat, *see Rat dung.* . . .

DUNG of toad, *see Toad dung.* . . .

DURAND, E. J. A preliminary Synopsis of the North American Species of Mitrula. [Abstract.] Science, N. S. 17:261. 13 Feb. 1903.

EARLE, F. S. A Key to the North American Species of Cortinarius, II. Torreya, 2:180-3. Dec. 1902.

EARLE, F. S. A Key to the North American Species of Lentinus, I. Torreya, 3:35-8. March 1903.

EARLE, F. S. A Key to the North American Species of Stropharia. Torreya, 3:24. Feb. 1903.

EARTH among moss and Cladonia, matrix for Lecidea granulosa phyllizans A. Zahlbr. n. var. Beihefte z. Bot. Centralbl. 13:159. 1902.

EARTH, matrix for Acarospora reagens A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:161. 1902.

EARTH, matrix for Bilimbia gyalectiformis A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:158. 1902.

EDIBLE Fungi. [Descriptions and colored plates of 11 species.] Charles H. Peck. N. Y. State Mus. Bull. 54:966-82. *pl. K. L, 77-81.* Nov. 1902.

EDIBLE Fungi, Food Value, *see Fungi, Edible.* . . .

EDWINIA americana, host to Pleospora edwiniæ Clements n. sp. Bull. Torr. Bot. Club, 30:85. Feb. 1903.

EDWINIA americana, branches, host to Stictis edwiniæ Clements n. sp. Bull. Torr. Bot. Club, 30:86. Feb. 1903.

EDWINIA americana, host to Tichosporium edwiniæ Clements n. sp. Bull. Torr. Bot. Club, 30:84. Feb. 1903.

ELLIS, J. B. and Bartholomew, E. New Species of Fungi from various localities. Jour. Mycol. 8:173-8. Dec. 1902.

EMPUSA, Cultures of. [E. grylli.] John L. Sheldon. Jour. Appl. Micr. & Lab. Meth. 6:2212-20. Pl. I-II. Mar. 1903.

ENDOCARPON monicæ A. Zahlbr. n. sp., ad saxa argillacea. Beihefte z. Bot. Centralbl. 13:153. 1902.

ENDOCARPON wilmsoides A. Zahlbr. n. sp., ad saxa argillaceo-schistosa. Beihefte z. Bot. Centralbl. 13:152. 1902.

EQUISETUM hyemale, host to Stamnaria americana Massee & Morgan. Jour. Mycol. 8:183. Dec. 1902.

ERIGERON macranthus, host to Puccinia confluens Syd. n. sp. Monogr. Uredin. 1:81. 30 June 1902.

ERYSIPHACEAE, *see Supplementary Notes on the; Addenda.* . . .

EUSTACE, H. J. A destructive Apple Rot Following Scab. [Cephalothecium roseum Cda.] N. Y. Agr. Exp. Sta. Bull. 227;-367-389. Pl. I-VIII. Dec. 1902.

EUSTACE, H. J. Parisitism of Cephalothecium roseum. Science, N. S. 16:747-8. 7 Nov. 1902.

EUTYPELLA glandulosa (Cke.) E. & E., Range of Variation in. [Abstract.] C. L. Shear. Science, N. S. 17:257. 13 Feb. 1903.

EXOSPORIUM cespitosum E. & B. n. sp., on dead birch (?) limbs. Jour. Mycol. 8:178. Dec. 1902.

FARLOW, W. G. Boletus betula and B. russellii. [Can easily be distinguished.] Lloyd's Mycological Notes [191], No. 11:105. Dec. 1902.

FARLOW, W. G. Hyprocrea alutacea. [Collected in N. H.] Lloyd's Mycological Notes [195], No. 11:110. Dec. 1902.

FAVOLASCHIEÆ [subfamily], *see New Family of the Basidiomycetes.* . . .

FERNEKES, Valentine, and Brown, Chas. E., *see Brown, Chas. E., and Fernekes.* . . .

FERTILIZATION of Phycomycetes, *see Phycomycetes, Studies in.* . .

FINK, Bruce. Some Talus Cladonia Formations. Bot. Gaz. 35:195-208. 5 full-page figures. Mar. 1903.

FINK, Bruce, and Husband, Mabel A. Notes on Certain Cladonias. Bryologist, 6:21-7. Pl. VII. Mar. 1903.

FLAMMULA velata Peck n. sp., woods along small streams. Bull. Torr. Bot. Club, 30:96. Feb. 1903.

FLECHTEN, Diagnosen neuer und ungenügend beschriebener kalifornischer Flechten. Alexander Zahlbruckner. Beihefte zum Bot. Centralbl. 13:149-163. 1902.

FLIES as Carriers of Bacteria, *see Bacteria, Flies, as.* . . .

FOMES albogriseus Peck n. sp., trunks of Tamarack and White Pine. Bull. Torr. Bot. Club, 30:97. Feb. 1903.

FOMES fulvus Gill., *syn. of Pyropolyporus fulvus q. v.* . . .

FOMES igniarius Gill., *syn of Pyropolyporus ignarius q. v.*

FOMES linteus Cooke, *syn. of Pyropolyporus linteus q. v.* . .

FOMES ribis Gill., *syn. of Pyropolyporus ribis q. v.* . . .

FOMES salicinus Gill., *syn. of Pyropolyporus conchatus q. v.*

FOMES senex Cooke, *syn. of Pyropolyporus senex q. v.* . . .

FROST, W. D., and Hastings, E. G. Bacteriology for High Schools. I. [Directions.] Jour. Appl. Micr. & Lab. Meth. 6:2205-8. March 1903.

FUNGI, *see New Species of.* . . . .

FUNGI, Ascomycetous, Two New, Parasitic on Algæ. Minnie Reed. Univ. Calif. Publications, Botany, 1:141-164. Pl. 15-16. 20 Nov. 1902.

FUNGI, Collecting and Preserving. Uredineæ. E. W. D. Holway. Jour. Appl. Micr. & Lab. Meth. 5:2075-6. Dec. 1902.

FUNGI, Destruction of Mosses by [in Vacation Observations. III]. (Probably by a Mucor-like organism and by a Myxomycette.) Francis E. Lloyd. Torreya, 3:5-6. Jan. 1903.

FUNGI, Edible, A Study of the Food Value of Some of the, of Ames, J. B. Weems and Alice W. Hess. Proc. 23rd. An. Meeting Soc. Prom. Agr. Sci. 1902:165-172. 1902.

FUNGI, Edible, *see Edible Fungi.* . . .

FUNGI. [List; 6 species, in Flora of New Providence and Andros: Bahama Islands.] Alice R. Northrop. Mem. Torr. Bot. Club, 12:15. 10 Dec. 1902.

FUNGI, Milwaukee County, Contributions toward a List of. Chas. E. Brown and Valentine Fernekes. Bull. Wisc. Nat. Hist. Soc. 2:45. 1902.

FUNGI, New Species, *see New Species of Fungi.* . . .

FUNGI [7 additional to list of New Jersey Strand Plants.] John W. Harshberger. Proc. Acad. Nat. Sci. Philadelphia, 54: 665. Oct. 1902. 1903.

FUNGUS Disease of the Mulberry Fruit, *see Disease, Fungus.*

FUNGOUS Diseases of Fruits. [Popular lecture.] M. B. Waite. Trans. Mass. Hort. Soc. 1902:64-73. 1902.

FUNGUS, A new Genus of, *see New Genus, A.* . . . .

GALIUM aparine, host to Puccinia chondroderma Lindroth n. sp. (Pucc. galiorum et Pucc. ambigua Aut. p. p.) Meddel. fr. Stockholms Högskolas Botaniska Institute. Bd. IV. 1901.

GENERA Speciesque, Nova Ascomycetum, *see Nova.* . . .

GERARDIA tenuifolia, host to Puccinia gerardiæ Syd. n. sp. Ann. Mycolog. 1:18. Jan. 1903.

GERMINATIVE Power of the Conidia of Aspergillus oryzae. Mary F. Hiller. Proc. Ind. Acad. Sci. 1901:275-282. 1902.

GEASTER saccatus form major Lloyd n. f. Mycological Notes [196], No. 11:196. Dec. 1902.

GLOEOSPOREAE (subfamily), *see New Family of the Basidiomycetes.* . . . .

GLOEOSPORIUM fructigenum [asci in apple cankers], *see Bitter-rot fungus.* . . . .

GOAT, dung of, host to Heterocephalum aurantiacum Thaxter n. sp. Bot. Gaz. 35:157. Mar. 1903.

GANONG, W. F. The Society for Plant Morphology and Physiology. [Secretary's Report; four mycological papers.] Science, N. S. 17:454-466. 20 March 1903.

GOSSYPIUM herbaceum, dead stems, host to Botryodiplodia gossypii E. & B. n. sp. Jour. Mycol. 8:175. Dec. 1902.

GRASS, dead leaves, host to Chaetostroma graminis E. & B. n. sp. Jour. Mycol. 8:178. Dec. 1902.

GRAVEL, wet banks, matrix for Humaria ochroleuca Clements n. sp. Bull. Torr. Bot. Club, 30:91. Feb. 1903.

GROUND, in wet moss, matrix for Neottiopezis macrospora Clements n. sp. Bull. Torr. Bot. Club, 30:89. Feb. 1903.

GROUND in woods, matrix for Helvella adhaerens Peck n. sp. N. Y. State Mus. Bull. 54:956. Nov. 1902.

GROUND in the woods, matrix for Peziza morgani Massee n. sp. Jour. Mycol. 8:190. Dec. 1902.

GROUND, low, damp, in woods, matrix for Lactarius foetidus Peck n. sp. N. Y. State Mus. Bull. 54:949. Nov. 1902.

GROUND, matrix for Helvella brevissima Peck n. sp. Bull. Torr. Bot. Club. 30:100. Feb. 1903.

GROUND, matrix for Peziza nana Massee & Morgan n. sp. Jour. Mycol. 8:190. Dec. 1902.

GROUND under pine trees, matrix for Lepiota adnatifolia Peck n. sp. N. Y. State Mus. Bull. 54:947. Nov. 1902.

GUIGNARDIA alaskana Reed n. sp. immersed in the thalli of Prasiola borealis. Univ. Calif. Publications, Botany, 1:161. 20 Nov. 1902.

GUIGNARDIA ulvae Reed n. sp., immersed in the thallus of Ulva californica Wille. Univ. of California Publications, Botany, 1:160. 20 Nov. 1902.

GYMNOSPORANGIUM flaviformis (Atkinson) Earle n. n. [Rœstelia flaviformis Atkinson.] Contrib. U. S. Nat. Herb. 6:186. 31 July 1901.

HAPLOSPORELLA sambucina E. & B. n. sp., on dead stems of Sambucus canadensis. Jour. Mycol. 8:175. Dec. 1902.

HAPLOSPORELLA wistariae E. & B. n. sp., on Wistaria in cult., Louisville, Kans. Jour. Mycol. 8:175. Dec. 1902.

HARRISON, F. C., and Cumming, M. The Bacterial Flora of Freshly Drawn Milk. [History, list, notes, 1 n. sp.] Jour. Appl. Micr. & Lab. Meth. 5:2029-2038. Nov. 1902.

HARRISON, F. C., and Cumming, M. Bacterial Flora of Freshly Drawn Milk. II. Jour. Appl. Micr. & Lab. Meth. 5:2086-7. Dec. 1902.

HARRISON, F. C., and Cumming, M. The Bacterial Flora of Freshly Drawn Milk. III. Jour. Appl. Micr. & Lab. Meth. 6:2130-1. Jan. 1903.

HARRISON, F. C., and Cumming, M. The Bacterial Flora of Freshly Drawn Milk. IV. [Bibliography; 25 items.] Jour. Appl. Micr. & Lab. Meth. 6:2181. Feb. 1903.

HARSHBERGER, John W. Fungi [7 additional to list of New Jersey strand plants.] Proc. Acad. Nat. Sci., Philadelphia, 54:665. Oct. 1902. 1903.

HASSEA A. Zahlbr. n. g. [Lichenum.] Beihefte z. Bot. Centralbl. 13:150. 1902.

HASSEA bacillosa A. Zahlbr. n. n. [Verrucaria bacillosa Nyl.] Beihefte z. Bot. Centralbl. 13:150. 1902.

HASTINGS, E. G., and Frost, W. D., *see Frost, W. D. and Hastings.* . . . .

HAWTHORN trees, host to Pyropolyporus langloisii Murrill n. sp. Bull, Torr. Bot. Club, 30:118. Feb. 1903.

HELIANTHUS annuus, dead stems, host to Coniothyrium helianthi E. & B. n. sp. Jour. Mycol. 8:175. Dec. 1902.

HELOTIUM delectabile Massee & Morgan, n. sp. on slender twigs. Jour. Mycol. 8:184. Dec. 1902.

HELOTIUM marginatum Clements n. sp., ad ramos corticatos Salicis. Bull. Torr. Bot. Club, 30:88. Feb. 1903.

HELVELLA adhærens Peck n. sp., ground in woods. N. Y. State Mus. Bull. 54:956. Nov. 1902.

HELVELLA brevissima Peck n. sp., ground. Bull. Torr. Bot. Club, 30:100. Feb. 1903.

HELVELLA pileata Clements n. sp., ad terram et lignum udum. Bull Torr. Bot. Club, 30:94. Feb. 1903.

HEMEROCALLIS, host to Physalospora obtusa (Schw.)Cke. Jour. Mycol. 8:68. June 1902.

HEMLOCK, much decayed wood, host to Poria myceliosa Peck n. sp. N. Y. State Mus. Bull. 54:952. Nov. 1902.

HEPPIA hassei A. Zahlbr. n. sp., ad saxa granitica. Beihefte z. Bot. Centrabl. 13:157. 1902.

HERPOMYCES, Notes on the Genus. Roland Thaxter. [Abstract.] Science, N. S. 17:463. 20 Mar. 1903.

HESS, Alice W., and Weems, J. B., *see Weems, J. B., and.* . .

HETEROCEPHALUM Thaxter n. gen. [Hyphomycetes.] Bot. Gaz. 35:157. March 1903.

HETEROCEPHALUM aurantiacum Thaxter n. sp., on dung of toad; on goat dung. Bot. Gaz. 35:157. March 1903.

HETEROPLEGMA Clements n. gen. [Est plicaria hypothecio heteromorpho.] Bull. Torr. Bot. Club, 30:92. February 1903.

HETEROPLEGMA cæruleum Clements n. sp., ad terram udam umbrosamque. Bull. Torr. Bot. Club, 30:92. Feb. 1903.

HETEROPLEGMA crenatum Clements n. sp., ad terram pinguem udosamque inter muscos. Bull. Torr. Bot. Club, 30:92. Feb. 1903.

HILLER, Mary F. Germinative Power of the Conidia of Aspergillus oryzæ. Proc. Ind. Acad. Sci. 1901:275-282. 1902.

HOLWAY, E. W. D. Collecting and Preserving Fungi. Uredineæ. Jour. Appl. Micr. & Lab. Meth. 5:2075-6. Dec. 1902.

HOLWAY, E. W. D. Notes on Uredineæ. I. [Pucc. columbiensis, Pucc. fusca, Pucc. suffusca, letter of Relhan.] Jour. Mycol. 8:171-2. Dec. 1902.

HOLWAY, E. W. D. and Arthur, J. C., *see Arthur, J. C. and Holway.* . . .

HUMARIA ochroleuca Clements n. sp., inter muscos et in glarea ripis udis. Bull. Torr. Bot. Club, 30:91. Feb. 1903.

HUMARIA vitigena Massee & Morgan n. sp., on dead twigs of Vitis riparia. Jour. Mycol. 8:189. Dec. 1902.

HUSBAND, Mabel A. and Fink, Bruce, *see Fink, Bruce and.* . .

HYDNUM atroviride Morgan, *syn. of Phaeodon atroviride q. v.* .

HYDNUM conigenum Peck n. sp., fallen cones of bull pine, Pinus ponderosa. Bull. Torr. Bot. Club, 30:97. Feb. 1903.

HYDNUM cyaneotinctum Peck n. sp. Bull. Torr. Bot. Club, 30: 98. Feb. 1903.

HYDNUM umbilicatum Peck n. sp., among fallen leaves in woods. N. Y. State Mus. Bull. 54:953. Nov. 1902.

HYDNUM zonatum Batsch., *syn of Phaeodon zonatus q. v.* . .

HYGROPHORUS glutinosus Peck n. sp. N. Y. State Mus. Bull. 54:950. Nov. 1902.

HYMENOCHAETE curtisii (Berk.) Earle n. n. [Stereum curtisii Berk.] Contrib. U. S. Nat. Herb. 6:201. 31 July 1901.

HYMENOSCYPHA soleniiformis (B. & C.) Earle n. n. [Peziza soleniiformis B. & C.] Contrib. U. S. Nat. Herb. 6:158. 31 July 1901.

HYPHOLOMA aggregatum sericeum Peck n. var. N. Y. State Mus. Bull. 54:965. Nov. 1902.

HYPHOMYCETES, New or Peculiar North American. — III. Roland Thaxter. Bot. Gaz. 35:153-159. Pl. IV-V. March 1903.

HYPOCREA alutacea. [Collected in N. H.] W. G. Farlow. Lloyd's Mycological Notes [195]. No. 11:110. Dec. 1902.

HYPOMYCES. [H. lactifluorum, Parasitic on Lactarius, propels its spores 1½ inches or more.] Francis E. Lloyd. Torreya, 3:7. Jan. 1903.

INDEX to North American Mycology (continued). W. A. Kellerman. Jour. Mycol. 8:204-239. Dec. 1902.

INDEX to North American Mycology (continued). W. A. Kellerman. Jour. Mycol. 9:25-70. Feb. 1903.

JONES, L. R. Studies upon Plum Blight. Centralbl. f. Bakt. Par. u. Infektionskr.. Zweite Abt. 9:835-841. 15. Dez. 1902.

JUGLANS californica, bark, matrix for Microglœna hassei A. Zahlbr. n. sp. Beihefte z. Bot. Centralbl. 13:152. 1902.

JUGLANS cinerea, dead wood, host to Patellaria tetraspora Massee & Morgan n. sp. Jour. Mycol. 8:180. Dec. 1902.

JUGLANS nigra, host to Cucurbitaria juglandina E. & B. n. sp. Jour. Mycol. 8:174. Dec. 1902.

JUNIPERUS, standing trunk, host to Pyropolyporus earlei Murrill n. sp. Bull. Torr. Bot. Club, 30:117. Feb. 1903.

JUNIPERUS virginiana, host to Pyropolyporus juniperinus (Schrenk) Murrill. Bull. Torr. Bot. Club, 30:116. Feb. 1903.

KELLERMAN, W. A. A new species of Cephalosporium. Jour. Mycol. 9:5. Feb. 1903.

KELLERMAN, W. A. Index to North American Mycology (continued). Jour. Mycol. 8:204-239. Dec. 1902.

KELLERMAN, W. A. Index to North American Mycology (continued). Jour. Mycol. 9:25-70. Feb. 1903.

KELLERMAN, W. A. Notes from Mycological Literature. — III. Jour. Mycol. 8:193-203. Dec. 1902.

KELLERMAN, W. A. Notes from Mycological Literature. — IV. Jour. Mycol. 9:71-9. Feb. 1903.

KELLERMAN, W. A. Ohio Fungi. Fascicle VI. [Labels with reprint of the original descriptions of 20 species.] Jour. Mycol. 9:17-24. Feb. 1903.

KELLERMAN, W. A. Uredineous Infection Experiments in 1902. Jour. Mycol. 9:6-13. Feb. 1903.

LLOYD, C. G. Mycological Notes [214-231], No. 13:121-132. Pl. 6-9. Feb. 1903.

LLOYD, C. G. Mycological Notes [232-261], No. 14:133-148. Pl. 10-16. March 1903.

LLOYD, Francis E. Destruction of Mosses by Fungi (in Vacation Observations. III) [Probably by a Mucor-like organism, and by a Myxomycete.] Torreya, 3:5-6. Jan. 1903.

LLOYD, Francis E. Hypomyces. [H. lactifluorum, parasitic on Lactarius, propels its spores 1½ inches or more.] Torreya, 3:7. Jan. 1903.

LOGWOOD, host to Pyropolyporus haematoxyli Murrill n. sp. Bull. Torr. Bot. Club, 30:118. Feb. 1903.

LONG, William H., Jr. The Ravenelias of the United States and Mexico. [A monograph.] Bot. Gaz. 35:111-133. Pl. II-III. Feb. 1903.

LUPINUS argenteus, host to Uromyces occidentalis Diet. n. sp. Beiblatt zur Hedwigia, 42:(98). März 1903.

LUPINUS latifolius, host to Uromyces occidentalis Diet. n. sp. Beiblatt zur Hedwigia, 42:(98). März 1903.

LUPINUS sileri, host to Uromyces occidentalis Diet. n. sp. Beiblatt zur Hedwigia, 42:(98). März 1903.

MACROPODIA urceolata Clements n. sp., in arena aquosa. Bull. Torr. Bot. Club, 30:91. Feb. 1903.

MANGOOSE dung, host to Cephaliophora tropica Thaxter n. sp. Bot. Gaz. 35:158. Mar. 1903.

MANURE, rotted, matrix for Bolbitius glatfelteri Peck n. sp. Bull. Torr. Bot. Club, 30:97. Feb. 1903.

MARASMIUS subpilosus Peck n. sp., among fallen leaves and twigs in moist woods. Bull. Torr. Bot. Club, 30:95. Feb. 1903.

MELAMPSORA from Populus deltoides Marsh. [Unsuccessful cultures. Arthur.] Bot. Gaz. 35:11. Jan. 1903.

MELAMPSORA on Salix discolor Muhl. [Unsuccessful cultures. Arthur.] Bot. Gaz. 35:11. Jan. 1903.

METASPHAERIA opulastri Clements n. sp., ad ramulos vetustos Opulastri monogynae. Bull. Torr. Bot. Club, 30:84. Feb. 1903.

MICROGLAENA hassei A. Zahlbr. n. sp., on bark of Juglans californica. Beihefte z. Centralbl. 13:152. 1902.

MIMOSA fragrans, host to Ravenelia fragans Long n. sp., Bot. Gaz. 35:126. Feb. 1903.

MITREMYCES, Key to the species. [Lloyd.] Myc. Notes (218) No. 13:125. Feb. 1903.

MITRULA, A Preliminary Synopsis of the North American Species of. [Abstract.] E. J. Durand. Science, N. S., 17:261. 13 Feb. 1903.

MITRULIOPSIS Peck n. gen. [Related to Mitrula and Spathularia, but with filiform spores.] Bull. Torr. Bot. Club, 30:100. Feb. 1903.

MITRULIOPSIS flavida Peck n. sp., steep shaded banks. Bull. Torr. Bot. Club, 30:100. Feb. 1903.

MONOBLEPHARIS, Key to the species [Thaxter]. Rhodora, 5:105-6. Apr. 1903.

MONOBLEPHARIS, Notes on [Mycological Notes, 2]. R. Thaxter. Rhodora, 5:97-102. Pl. 46. April 1903.

MORCHELLA punctipes Peck n. sp. Bull. Torr. Bot. Club, 30:99. Feb. 1903.

MORGAN, A. P. Lepidoderma geaster (Link.) [Note as to structure and synonomy.] A. P. Morgan. Jour. Mycol. 9:3-4. Feb. 1903.

MOUSE dung, host to Cephaliophora irregularis Thaxter n. sp. Bot. Gaz. 35:158. Mar. 1903.

MOUSE dung, host to Cephaliophora tropica Thaxter n. sp. Bot. Gaz. 35:158. Mar. 1903.

MUCRONOPORUS everhartii Ell. & Gall. *syn of Pyropolyporus everhartii q. v.*

MURRILL, William Alphonso. A New Family of the Basidiomycetes. Xylophagaceae. [Based on Xylophagus. The sub-families are Favolaschieae, Xylophageae, Gloeoporeae.] Torreya, 3:7. Jan. 1903.

MURRILL, William Alphonso. The Polyporaceae of North America. II, The Genus Pyropolyporus. Bull. Torr. Bot. Club, 30:109. Feb. 1903.

MYCOLOGICAL Notes [24-231]. C. G. Lloyd. No. 13:121-132. Pl. 6-9. Feb. 1903.

MYCOLOGICAL Notes [232-261]. C. G. Lloyd. No. 14-133-148. Pl. 10-16. March 1903.

MYCOLOGICAL Notes 1-2. [A New England Choanephora; Notes on Monoblepharis.] R. Thaxter. Rhodora, 5:97-108. Pl. 46. April 1903.

MYCOSPHÆRELLA arundinariæ (Atkinson) Earle n. n. [Sphærella arundinariæ Atkinson.] Contrib. U. S. Nat. Herb. 6: 174. 31 July 1901.

MYCOSPHÆRELLA baptisiicola (Cooke) Earle n. n. [Sphærella baptisiicola Cooke.] Contrib. U. S. Nat. Herb. 6:174. 31 July 1901.

MYCOSPHÆRELLA colorata (Peck) Earle n. n. [Sphærella colorata Peck.] Contrib. U. S. Nat. Herb. 6:174. 31 July 1901.

MYCOSPHÆRELLA gossypina (Atkinson) Earle n. n. [Sphærella gossypina Atkinson.] Contrib. U. S. Nat. Herb. 6:174. 31 July 1901.

MYCOSPHÆRELLA leptopleura (DeNot.) Earle n. n. [Sphærella leptopleura DeNot.] Contrib. U. S. Nat. Herb. 6:174. 31 July 1901.

MYCOSPHÆRELLA trichophila (Karst.), nuda, *syn. of Mycosphaerium lineatum q. v.* . . .

MYCOSPHÆRIUM lineatum Clements n. n. [Pro Mycosphærella Johan., nomine hybrido. Est M. trichophila (Karst.), nuda.] Pedicularis proceræ ad caules emortuos. Bull. Torr. Bot. Club, 30:84. Feb. 1903.

NEOKNEIFFIA aspera (Pers.) Earle n. n. [Kneiffiella setigera Fr., Kneiffiella aspera (Pers.) Underw.] Contrib. U. S. Nat. Herb. 6:203. 31 July 1901.

NEOKNEIFFIA candidissima (B. & C.) Earle n. n. [Kneiffiella candidissima (B. & C.) Underw.] Contr. U. S. Nat. Herb. 6:203. 31 July 1901.

NEORAVENELIA Long. n. gen. Bot. Gaz. 35:131. Feb. 1903.

NEORAVENELIA holwayi (Diet.) Long. n. n. (Ravenelia holwayi Diet.) Bot. Gaz. 35:131. Feb. 1903.

NEOTTIELLA Cooke, *syn. of Neottiopezis q. v.* . . .

NEOTTIOPEZIS Clements n. n. [Pro Neottiella Cooke, nomine hybrido.] Bull. Torr. Bot. Club, 30:89. Feb. 1903.

NEOTTIOPEZIS macrospora Clements n. sp., ad terram inter muscos udos. Bull. Torr. Bot. Club, 30:89. Feb. 1903.

NEW Family of the Basidiomycetes.— Xylophagaceæ. [Based on Xylophagus. The subfamilies are Favolaschieæ, Xylophageæ and Gloeoporeæ.] William Alphonso Murrill. Torreya, 3:7. Jan. 1903.

NEW species, *see Zwei neue Pilze.* . . .

NEW Species of Calostoma, A. Geo. F. Atkinson. Jour. Mycol. 9:14-17. Feb. 1903.

NEW Species of Cephalosporium, A. W. A. Kellerman, Jour. Mycol. 9:5. Feb. 1903.

NEW Species of Fungi. Charles H. Peck. [Eighteen species of the Higher Fungi; one new genus.] Bull. Torr. Bot. Club, 30:95-101. Feb. 1903.

NOTES from Mycological Literature III. W. A. Kellerman. Jour. Mycol. 8:193-203. Dec. 1902.

NOTES from Mycological Literature IV. W. A. Kellerman. Jour. Mycol. 9:71-9. Feb. 1903.

NOTES on Sclerospora graminicola [distribution.] Frank Lincoln Stevens. Jour. Mycol. 9:13. Feb. 1903.

NOVA Ascomycetum Genera Speciesque. Frederick E. Clements. Bull. Torr. Bot. Club, 30:83-94. Feb. 1903.

NUCLEAR and Cell Division in Diplophrys stercorea Cienk., *see Diplophrys*. . . .

OAK trees, base of, habitat for Pholiota fulvosquamosa Peck n. sp. Bull. Torr. Bot. Club, 30:95. Feb. 1903.

OHIO Fungi. Fascicle VI. [Labels with reprint of original descriptions, 20 species.] W. A. Kellerman. Jour. Mycol. 9:17-24. Feb. 1903.

OLIVE, Edgar W. Nuclear and Cell Division in Diplophrys stercorea Cienk. [Abstract.] Science, N. S. 17:260. 13 Feb. 1903.

OPHIOGLOEA Clements n. gen. [Ascomycetes. A Holwaya differt forma cupulæ excipuloque, ab etc.] Bull. Torr. Bot. Club, 30:86. Feb. 1903.

OPHIOGLOEA linospora Clements n. sp., ad lignum decorticatum putridumque Aceris glabri (?). Bull. Torr. Bot. Club, 30: 87. Feb. 1903.

OPULASTER monogyna, host to Metasphæria opulastri Clements n. sp. Bull. Torr. Bot. Club, 30:84. Feb. 1903.

ORTON, W. A. On a Fungus Disease of the Mulberry Fruit. [Undescribed species. Abstract.] Science, N. S. 17:261. 13 Feb. 1903.

PAXINE, O.K., *syn. of Phleboscyphus q. v.*

PECK, Charles H. New Species of Fungi. [Eighteen species of Higher Fungi; one new genus.] Bull. Torr. Bot. Club, 30: 95-101. Feb. 1903.

PEDICULARIS procera, host to Mycosphærium lineatum Clements n. n. Bull. Torr. Bot. Club, 30:84. Feb. 1903.

PENICILLIUM glaucum [used in the study of the endo-enzyme Inulase, Dean]. Bot. 35:24-35. Jan. 1903.

PERIDERMIUM holwayi Syd. n. sp., in acubus vivis Pseudotsugæ douglasii. Ann. Mycolog. 1:19. Jan. 1903.

PEZIZA convoluta Peck n. sp.,sandy soil. Bull. Torr. Bot. Club, 30:101. Feb. 1903.

PEZIZA soleniiformis B. & C., *syn. of Hymenoscypha soleniiformis, q. v.*

PHACELIA circinata, host to Puccinia phaceliæ Syd. et Holw. n. sp. Monogr. Uredin. 1:314. 15 Nov. 1902.

PHÆODON atroviride (Morgan) Earle n. n. [Hydnum atroviride Morgan.] Contrib. U. S. Nat. Herb. 6:205. 31 July 1901.

PHÆODON zonatus (Batsch.) Earle n. n. [Hydnum zonatum Batsch.] Contrib. U. S. Nat. Herb. 6:205. 31 July 1901.

PHELLINUS, *syn of Pyropolyporus, q. v.*

PHELLINUS igniarius Quél., *syn. of Pyropolyporus igniarius, q. v.*

PHELLINUS salicinus Quél., *syn. of Pyropolyporus conchatus, q. v.*

PHLEBOSCYPHUS Clements n. n. [Pro. Paxina O. K., nomine hybrido, præpositum est.] Bull. Torr. Bot. Club, 30:93. Feb. 1903.

PHLEBOSCYPHUS macropus Clements n. sp., ad terram udam in antro saxoso. Bull. Torr. Bot. Club, 30:93. Feb. 1903.

PHLEBOSCYPHUS olivaceus Clements n. sp., ad terram udam. Bull. Torr. Bot. Club, 30:93. Feb. 1903.

PHLEBOSCYPHUS radicatus Clements n. sp., in locis udis sub saxis. Bull. Torr. Bot. Club, 30:94. Feb. 1903.

PHLOX richardsoni, host to Puccinia richardsoni Syd. n. sp. Monogr. Uredin. 1:317. 15 Nov. 1902.

PHOLIOTA fulvosquamosa Peck n. sp., about the base of oak trees. Bull. Torr. Bot. Club, 30:95. Feb. 1903.

PHORCYS minutis Clements n. sp., ad folia vetusta exsiccataque Yuccæ glaucæ. Bull. Torr. Bot. Club, 30:84. Feb. 1903.

PHRAGMIDIUM speciosum Fr., culture on Rosa humilis [Arthur]. Bot., 35:17. Jan. 1903.

PHYLLOSTICTA labruscæ Thüm., on cultures of the Leaf-spot of the Grape. [Abstract.] A. D. Selby. Science, N. S., 17:364. 13 Feb. 1903.

PICEA engelmannii, wood, host to Dasyscypha incarnata Clements n. sp. Bull. Torr. Bot. Club, 30:89. Feb. 1903.

PICEA, putrescent beams, host to Scutellinia irregularis Clements n. sp. Bull. Torr. Bot. Club, 30:90. Feb. 1903.

PICEA, wood and needles, host to Scutellinia chætoloma Clements n. sp. Bull. Torr. Bot. Club, 30:90. Feb. 1903.

PINE, white, and Tamarack, trunks, host to Fomes albogriseus Peck n. sp. Bull. Torr. Bot. Club, 30:97. Feb. 1903.

PINUS ponderosa, fallen cones of, host to Hydnum conigenum Peck n. sp. Bull. Torr. Bot. Club, 30:98. Feb. 1903.

PLECTANIA rimosa Peck n. sp. Bull. Torr. Bot. Club, 30:100. Feb. 1903.

PLEORAVENELIA Long, n. gen. Bot. Gaz. 35:127. Feb. 1903.

PLEORAVENELIA, Key to species. [Long.] Bot. Gaz. 35:127. Feb. 1903.

PLEORAVENELIA brogniartiæ (Diet. & Holw.) Long n. n. [Ravenelia brogniartiæ Diet. & Holw.] Bot. Gaz. 35:130. Feb. 1903.

PLEORAVENELIA epiphylla (Schw.) Long n. n. [Sphæria epiphylla Schw., Ravenelia glanduliformis Berk. & Curt., Ravenelia epiphylla Dietel.] Bot. Gaz. 35:128. Feb. 1903.

PLEORAVENELIA glabra (Kalchbr. & Cke.) Long n. n. [Ravenelia glabra Kalchbr. & Cke.] Bot. Gaz. 35:127. Feb. 1903.

PLEORAVENELIA hieronymi (Speg.) Long n. n. [Ravenelia hieronymi Speg.] Bot. Gaz. 35:127. Feb. 1903.

PLEORAVENELIA indigoferæ (Transz.) Long n. n. [Ravenelia indigoferæ Transz.] Bot. Gaz. 35:129. Feb. 1903.

PLEORAVENELIA lævis (Diet. & Holw.) Long n. n. [Ravenelia lævis Diet. and Holw.] Bot. Gaz. 35:127. Feb. 1903.

PLEORAVENELIA macowaniana (Pazschke) Long n. n. [Ravenelia macowaniana Pazschke.] Bot. Gaz. 35:127. Feb. 1903.

PLEORAVENELIA similis Long n. sp., on Brongniartia. Bot. Gaz. 35:128. Feb. 1903.

PLEORAVENELIA talpa Long n. sp., on Tephrosia talpa. Bot. Gaz. 35:130. Feb. 1903.

PLEORAVENELIA tephrosiæ (Kalchbr.) Long n. n. [Ravenelia tephrosiæ Kalchbr.] Bot. Gaz. 35:127. Feb. 1903.

PLEOSPHÆRIA lithospermi Clements n. sp., ad caules mortuos Lithospermi parviflori. Bull. Torr. Bot. Club, 30:83. Feb. 1903.

PLEOSPORA edwiniæ Clements n. sp., ad ramos siccatos Edwiniæ americanæ. Bull. Torr. Bot. Club, 30:85. Feb. 1903.

PLEOSPORA sepulta Clements n. sp., ad ramos ignotos vetustos decorticatosque. Bull. Torr. Bot. Club, 30:85. Feb. 1903.

PLICARIA chlorophysa Clements n. sp., ad lignum udum vetustumque; ad fimum. Bull. Torr. Bot. Club, 30:91. Feb. 1903.

PODAXINEÆ, Key to the Genera. [C. G. Lloyd.] Myc. Notes (240), No. 14:137. March 1903.

POLYGONOM pennsylvanicum, host to Physalospora obtusa (Schw.) Cke. Jour. Mycol. 8:68. June 1902.

POLYPORACEÆ of North America. II. The Genus Pyropolyporus. William Alphonso Murrill. Bull. Torr. Bot. Club, 30:109. Feb. 1903.

POLYPORUS conchatus Fr., *syn. of Pyropolyporus conchatus, q. v.*

POPULUS deltoides, host to Cytosporella macrospora Peck n. sp. Bull. Torr. Bot. Club, 30:99. Feb. 1903.

POLYPORUS fraxinophilus, A disease of the White Ash caused by. Hermann von Schrenk. U. S. Dept. Agr. Bureau Pl. Industry, Bull. 32:1-20. Pl. I-V. 28 Feb. 1903.

POLYPORUS fulvus Fr., *syn. of Pyropolyporus fulvus, q. v.*

POLYPORUS igniarius Fr., *syn. of Pyropolyporus igniarius, q. v.*

POLYPORUS juniperinus Schrenk, *syn. of Pyropolyporus juniperinus, q. v.*

POLYPORUS linteus, B. & C., *syn. of Pyropolyporus linteus, q. v.*

POLYPORUS ribis Fr., *syn. of Pyropolyporus ribis, q. v.*

POLYPORUS senex, *syn. of Pyropolyporus senex, q. v.*

PROBLEMS in the Study of Plant Rusts. [Presidential Address. Botanical Society of America. J. C. Arthur.] Bull. Torr. Bot. Club, 30:1-18. Jan. 1903.

P[SEUDOMONAS] Stewarti, Completed Proof that, is the cause of the Sweet Corn Disease of Long Island. [Abstract.] Erwin F. Smith. Science, N. S. 17:457. 20 March, 1903.

PSEUDOTSUGA douglasii, host to Peridermium holwayi Syd. n. sp Ann. Mycolog. 1:20. Jan. 1903.

PSIDIUM, old stump, host to Polyporus jamaicensis Murrill n. sp. Bull. Torr. Bot. Club, 30:120. Feb. 1903.

PSILOTHECIUM Clements n. gen. [Ascomycetes. Patinellæ affinis.] Bull. Torr. Bot. Club, 30:85. Feb. 1903.

PSILOTHECIUM incurvum Clements n. sp., al lignum udum decorticatumque Salicis chlorophyllæ. Bull. Torr. Bot. Club, 30:86. Feb. 1903.

PUCCINIA amphigena Diet. from Calamovilfa longifolia (Hook.) Hack., successful cultures on Smilax herbacea L., and S. hispida Muhl. [Arthur.] Bot. Gaz. 35:20. Jan. 1903.

PUCCINIA amphilophii Diet. & Holw., *syn. of Puccinia phlyctopus, q. v.*

PUCCINIA andropogonis Schw. from Andropogon scoparius [successful cultures on Pentstemon hirsutus. Kellerman.] Jour. Mycol. 9:10. Feb. 1903.

PUCCINIA angustata Pk. [culture on Lycopus americanus. Arthur.] Jour. Mycol. 8:53. June 1903.

PUCCINIA atkinsoniana Diet. from Carex lurida [successful cultures on Sambucus canadensis. Kellerman]. Jour. Mycol. 9:7. Feb. 1903.

PUCCINIA atkinsoniana Diet., *syn. of Puccinia sambuci, q. v.*

PUCCINIA atkinsoniana Diet. and P. bolleyana Sacc. [identical and are designated P. sambuci (Schw.) Arthur n. n.]. Bot. Gaz. 35:14-15. Jan. 1903.

PUCCINIA bartholomæi Diet. [successful cultures on Aselepias incarnata L. and A. syriaca L. Arthur]. Bot. Gaz. 35:18. Jan. 1903.

PUCCINIA bartholomæi Diet., *syn. of P. jamesiana, q. v.*

PUCCINIA bolleyana Sacc. from Carex trichocarpa [successful cultures on Sambucus canadensis. Kellerman]. Jour. Mycol. 9:8. Feb. 1903.

PUCCINIA bolleyana Sac., *syn. of Puccinia sambuci, q. v.*

PUCCINIA bolleyana Sacc. [cultures on Sambucus canadensis; no infection on other hosts. Arthur]. Jour. Mycol. 8:55. June 1902.

PUCCINIA caricis (Schum.) Reb. from Carex riparia [successful cultures on Urtica gracilis. Kellerman]. Jour. Mycol. 9:9. Feb. 1903.

PUCCINIA caricis (Schum.) from Carex stricta. [successful cultures on Urtica gracilis. Kellerman]. Jour. Mycol. 9:10. Feb. 1903.

PUCCINIA caricis (Schum.) Reb. [culture on Urtica gracilis. Arthur]. Jour. Mycol. 8:52. June 1903.

PUCCINIA caricis (Schum.) Reb. [cultures on Urtica gracilis; no infection on other hosts. Arthur]. Bot. Gaz. 35:16. Jan. 1903.

PUCCINIA caricis-asteris Arth. [cultures on Aster paniculatus; no infection on Solidago serotina. Arthur]. Bot. Gaz. 33:15. Jan. 1903.

PUCCINIA caricis-asteris Arth. [cultures on Erigeron annuus (L.) Pers., E. philadelphicus L., and Leptilon canadense (L.) Britt. Arthur]. Bot. Gaz. 35:15-16. Jan. 1903.

PUCCINIA caricis-solidaginis Arthur n. n. [Aecidium solidaginis Schw. Puccinia on Carex jamesii Schw. and P. on Carex stipata Muhl.] Bot. Gaz. 35:21. Jan. 1903.

PUCCINIA chamasarachæ Syd. n. sp., in foliis petiolisque vivis Chamasarachæ nanæ. Monogr. Uredin. 1:263. 15 Nov. 1903.

PUCCINIA chasmatis Ell. & Ev. (Jour. Mycol. 8:15. May 1902), synonym of Puccinia toumeyi Syd. (Sacc. Syll. 16:299. Feb. 1902). Ann. Mycolog. 1:19. Jan. 1903.

PUCCINIA chloridis Speg. [unsuccessful cultures. Arthur]. Bot. Gaz. 35:12. Jan. 1903.

PUCCINIA circinans Ell. & Ev. (nec Dietel), *syn. of Puccinia toumeyi, q. v.*

PUCCINIA eleocharidis Arth. [unsuccessful cultures. Arthur]. Bot. Gaz. 35:11. Jan. 1903.

PUCCINIA emaculata Schw. [unsuccessful cultures. Arthur]. Bot. Gaz. 35:12. Jan. 1903.

PUCCINIA exitiosa Syd. et Holw., n. sp., in foliis, gemmis calycibusque Tecomæ mollis. Monogr. Uredin. 1:245. 15 Nov. 1902.

PUCCINIA fusca (Pers.) Winter (Aecidium fuscum Pers.) [Description and figure. Bubak.] Beiblatt zur Hedwigia, 42: (29). Jan.-Feb. 1903.

PUCCINIA fusca (Relhan), *see Puccinia fusca (Pers.) Winter.* . . .

PUCCINIA gerardiæ Syd. n. sp., in foliis caulibusque Gerardiæ tenuifoliæ. Ann. Mycolog. 1:18. Jan. 1903.

PUCCINIA helianthi Schw. [cultures on Helianthus grosse-serratus Mart. and maximiliani Schrad.; no infection on H. strumosus. Arthur]. Bot. Gaz. 35:17. Jan. 1903.

PUCCINIA impatientis (Schw.) Arthur n. n. [Puccinia rubigovera Auct. on Elymus virginicus L., and Aecidium impatientis Schw.] Bot. Gaz. 35:19. Jan. 1903.

PUCCINIA imperspicua Syd. n. sp., in foliis vivis Arracachæ multifidæ. Monogr. Uredin. 1:361. 15 Nov. 1902.

PUCCINIA jamesiana (Pk.) Arth. n. n. [Puccinia bartholomæi Diet., Aecidium jamesiana Pk.] Bot. Gaz. 35:18. Jan. 1903.

PUCCINIA mitrata Syd. n. sp., in foliis vivis Salviæ mexicanæ. Monogr. Uredin. 1:294. 15 Nov. 1902.

PUCCINIA muhlenbergiæ A. & H. [unsuccessful cultures. Arthur]. Bot. Gaz. 35:11. Jan. 1903.

PUCCINIA nigrescens Peck, *syn. of Puccinia salviae-lanceolatae, q. v.*

PUCCINIA on Carex stipata Muhl. [successful cultures on Solidago canadensis and S. serotina. Arthur]. Bot. Gaz. 35: 21. Jan. 1903.

PUCCINIA on Carex jamesii Schw. [successful cultures on Solidago canadensis, S. ulmifolia Muhl., S. cæsia L., S. rigida L. and S. serotina Ait. Arthur]. Bot. Gaz. 35:21. Jan. 1903.

PUCCINIA panicullariæ Arth. [unsuccessful cultures. Arthur.] Bot. Gaz. 35:12. Jan. 1903.

PUCCINIA peckii (DeToni) Kellerm. from Carex trichocarpa [successful cultures on Onagra biennis, Kellerman]. Jour. Mycol. 9:9. Feb. 1903.

PUCCINIA peckii (DeT.) Kellerm. [cultures on Onagra biennis (L.) Scop.; on other hosts not successful. Arthur]. Bot. Gaz. 35:13. Jan. 1903.

PUCCINIA phaceliæ Syd. et Holw. n. sp., in foliis vivis Phaceliæ circinatæ. Monogr. Uredin 1:314. 15 Nov. 1902.

PUCCINIA phlyctopus Syd. n. n. [Puccinia amphilophii Diet. & Holw]. Monogr. Uredin. 1:242. 15 Nov. 1902.

PUCCINIA poculiformis (Jacq.) Wettst. [culture on Berberis vulgaris. Arthur]. Jour. Mycol. 8:53. June 1902.

PUCCINIA polygoni-amphibii Pers. [unsuccessful cultures. Arthur]. Bot. Gaz. 35:12. Jan. 1903.

PUCCINIA pulsatillæ (Opiz.) Rostrop. (Dicæoma pulsatillæ Opiz., Puccinia suffusca Holway). [Description and figure, Bubák.] Beiblatt zur Hedwigia, 42:(30). Jan.-Feb. 1903.

PUCCINIA purpurea Cke. [unsuccessful cultures. Arthur]. Bot. Gaz. 35:12. Jan. 1903.

PUCCINIA retecta Syd. n. sp., in foliis petiolisque Anemone narcissifloræ (Puccinia versiculosa in Griff. West Am. Fung. No. 328). Ann. Mycolog. 1:34. Jan. 1903.

PUCCINIA richardsoni Syd. n. sp., in foliis vivis Phlogis douglasii. Monogr. Uredin. 1:317. 15 Nov. 1902.

PUCCINIA rubigo-vera Auct. on Elymus virginicus L. [successful cultures on Impatiens aurea, and synonym of Puccinia impatientis (Schw.) Arth. n. n. Arthur]. Bot. Gaz. 35:19. Jan. 1903.

PUCCINIA salviæ-lanceolatæ Bubák n. n. (Puccinia nigrescens Peck). Monogr. Uredin. 1:294. 15 Nov. 1902.

PUCCINIA sambuci (Schw.) Arthur n. n. [P. atkinsoniana Diet. P. bolleyana Lacc.] Bot. Gaz. 35:15. Jan. 1903.

PUCCINIA schedonnardi K. & S. [unsuccessful cultures. Arthur]. Bot. Gaz. 35:11. Jan. 1903.

PUCCINIA simillima Arth. from Phragmites phragmites (L.) Karst. (P. communis Trin.) [successful cultures on Anemone canadensis; no infection on other species of Anemone. Arthur]. Bot. Gaz. 35:20. Jan. 1903.

PUCCINIA sporoboli Arth. [unsuccessful cultures. Arthur]. Bot. Gaz. 35:12. Jan. 1903.

PUCCINIA stipæ Arth. [unsuccessful cultures. Arthur] Bot. Gaz. 35:12. Jan. 1903.

PUCCINIA subdecora Syd. et Holw. n. sp., in foliis vivis Brickelliæ grandiflora. Ann. Mycolog. 1:17. Jan. 1903.

PUCCINIA subnitens Diet. [successful cultures on Chenopodium album L. Arthur]. Bot. Gaz. 35:20. Jan. 1903.

PUCCINIA suffiusca Holway, *syn. of Puccinia pulsatillae q. v.*

PUCCINIA toumeyi Syd. n. n. (Puccinia circinans Ell. & Ev. nec Diet.) Sacc. Syll. 16:299. 1901.

PUCCINIA verbenicola (Kell. & Sw.) Arth. n. n. [Puccinia vilfæ A. & H.; Aecidium verbenicolum Kell. & Sw.]. Bot. Gaz. 35:16. Jan. 1903.

PUCCINIA vilfæ A. & H. [cultures on Verbena stricta Vent., and V. urticifoliæ L.; and designated P. verbenicola (Kell, & Sw.) Arthur]. Bot. Gaz. 35:16. Jan. 1903.

PUCCINIA vilfæ A. & H., *syn. of Puccinia verbenicola, q. v.*

PUCCINIA windsoriæ Schw. from Tricuspis sesleriodides. [successful cultures on Ptelea trifoliata Kellerman]. Jour. Mycol. 9:10. Feb. 1903.

PUCCINIA windsoriae Schw. [culture on Tricuspis seslerioides Torr. (Triadia cuprea (Jacq.) Arthur]. Bot. Gaz. 35:16. Jan. 1903.

PUCCINIEN, Bemerkungen über einige. [Puccinia fusca, P. pulsatillæ.] Fr. Bubák. Beiblatt zur Hedwigia, 42:(28)-(32). Jan.-Feb. 1903.

PYROPOLYPORUS, the genus, *see Polyporaceae of N. A.* . . .

PYROPOLYPORUS, Key to the North American species. [Murrill]. Bull. Torr. Bot. Club, 30:109. Feb. 1903.

PYROPOLYPORUS Murrill n. gen. [Phellinus Quélet.] Bull. Torr. Bot. Club, 30:109. Feb. 1903.

PYROPOLYPORUS calkinsii Murrill n. sp., on living trees of Live-Oak. Bull. Torr. Bot. Club, 30:113. Feb. 1903.

PYROPOLYPORUS conchatus (Pers.) Murrill n. n. [Polyporus conchatus Fr., Fomes salicinus Gill. Phellinus salicinus Quél.] Bull. Torr. Bot. Club, 30:117. Feb. 1903.

PYROPOLYPORUS crustosus Murrill n. sp., on a standing tree trunk. Bull. Torr. Bot. Club, 30:113. Feb. 1903.

PYROPOLYPORUS earlei Murrill n. sp., on a standing trunk of Juniperus. Bull. Torr. Bot. Club, 30:116. Feb. 1903.

PYROPOLYPORUS everhartii (Ell. & Gall.) Murrill n. sp. [Mucronoporus everhartii Ell. & Gall., Xanthochrous everhartii Pat.] Bull. Torr. Bot. Club, 30:114. Feb. 1903.

PYROPOLYPORUS fulvus (Scop.) Murrill n. n. [Polyporus fulvus Fr., Fomes fulvus Gill.] Bull. Torr. Bot. Club, 30:112. Feb. 1903.

PYROPOLYPORUS haematoxyli Murrill n. sp., at the base of living logwood tree. Bull. Torr. Bot. Club, 30:117. Feb. 1903.

PYROPOLYPORUS igniarius (L.) Murrill n. n. [Polyporus igniarius Fr. Fomes igniarius Gill.] Bull. Torr. Bot. Club, 30:110. Feb. 1903.

PYROPOLYPORUS jamaicensis Murrill n. sp., on an old stump of Psidium. Bull. Torr. Bot. Club, 30:120. Feb. 1903.

PYROPOLYPORUS juniperinus (Schrenk) Murrill n. n. (Polyporus juniperinus Schrenk.) Bull. Torr. Bot . Club, 30:116. Feb. 1903.

PYROPOLYPORUS langloisii Murrill n. sp., exclusively on dead or dying hawthorn trees near the base of the trunk. Bull. Torr. Bot. Club, 30:118. Feb. 1903.

PYROPOLYPORUS linteus (B. & C.) Murrill n. n. [Polyporus linteus B. & C., Fomes linteus Cooke.] Bull. Torr. Bot. Club, 30:119. Feb. 1903.

PYROPOLYPORUS praerimosus Murrill n. sp., on Quercus undulata. Bull. Torr. Bot. Club, 30:115. Feb. 1903.

PYROPOLYPORUS ribis (Schum.) Murrill n. n. [Polyporus ribis Fr., Fomes ribis Gill.] Bull. Torr. Bot. Club, 30:118. Feb. 1903.

PYROPOLYPORUS robiniae Murrill n. sp., on Robinia and Acacia emarginata. Bull. Torr. Bot. Club, 30:114. Feb. 1903.

PYROPOLYPORUS senex (Nees & Mont.) Murrill n. n. [Polyporus senex Nees & Mont., Fomes senex Cooke.] Bull. Torr. Bot. Club, 30:119. Feb. 1903.

PYROPOLYPORUS underwoodii Murrill n. sp. Bull. Torr. Bot. Club, 30:116. Feb. 1903.

PYROPOLYPORUS yucatanensis Murrill n. sp. Bull. Torr. Bot. Club, 30:116. Feb. 1903.

QUERCUS undulata, host to Pyropolyporus praerimosus Murrill n. sp. Bull. Torr. Bot. Club, 30:115. Feb. 1903.

RASPBERRY Cane Blight (Coniothyrium) and Raspberry Yellows. F. C. Stewart and H. J. Eustace. N. Y. Agr. Exp. Sta. Bull. 226:331-366. Dec. 1902.

RAT dung, host to Cephaliophora tropica Thaxter n. sp. Bot. Gaz. 35:158. Mar. 1903.

RAVENELIA brogniartiæ Diet. & Holw., *syn. of Pleoravenelia brogniartiae, q. v.*

RAVENELIA decidua (Pk.) Holway, syn. of Ravenelia versatilis (Peck) Dietel. [Long.] Bot. Gaz. 35:118-9. Feb. 1903.

RAVENELIA epiphylla Dietel, *syn. of Pleoravenelia epiphylla, q. v.*

RAVENELIA fragrans Long n. sp., on Mimosa fragrans. Bot. Gaz. 35:123. Feb. 1903.

RAVENELIA glanduliformis Berk. & Curt., *syn. of Pleoravenelia epiphylli, q. v.* . . .

RAVENELIA holwayi Diet., *syn. of Neoravenelia holwayi, q. v.*

RAVENELIA indigoferae Transz., *syn. of Pleoravenelia indigoferae, q. v.*

RAVENELIA, Key to species. [Long.] Bot. Gaz. 35:115. Feb. 1903.

RAVENELIA, Key to Genera. [Long.] Bot. Gaz. 35:115. Feb. 1903.

RAVENELIA lævis Diet. & Holw., *syn. of Pleoravenelia laevis, q. v.*

RAVENELIA leucaenae Long n. sp., on Leucaena diversifolia. Bot. Gaz. 35:126. Feb. 1903.

RAVENELIA siliquæ Long n. sp., on pods of Acacia farnesiana. Bot. Gaz. 35:118. Feb. 1903.

RAVENELIAS of the United States and Mexico. [A Monograph.] William H. Long, Jr. Bot. Gaz. 35:111-133. Pl. II & III. Feb. 1903.

RHIZOBIA, Contributions to the biology of. II. The mobility of Rhizobium mutabile. Albert Schneider. Bot. Gaz. 35:56-8. Jan. 1903.

RHIZOBIUM mutabile [mobility of.Schneider]. Bot. Gaz. 35:56. Jan. 1903.

RHOPALOMYCES cucurbitarum. B & Rav. *syn. of Choanephora cucurbitarum q. v.*

RHOPALOMYCES elegans var. cucurbitarum March., *syn. of Choanephora cucurbitarum, q. v.*

RIBES cynosbati L., host to Aecidium albiperidium (syn. of Puccinia albiperidia Arth. n. sp.) Jour. Mycol. 8:53. June 1902.

ROBINIA, host to Pyropolyporus robiniae Murrill n. sp. Bull. Torr. Bot. Club, 30:114. Feb. 1903.

ROESTELIA flaviformis Atkinson, *syn. of Gymnosporangium flaviformis, q. v.*

ROT, Apple, A Destructive, following Scab. [Cephalothecium roseum Cda.] H. J. Eustace. N. Y. Agr. Exp. Sta. Bull. 227:367-389. Pl. I-VIII. Dec. 1902.

ROT, Black, Effect on Turnips. [Pseudomonas campestris (Pammel) Smith.] Erwin F. Smith. U. S. Dept. Agr. Bureau Pl. Industry. Bull. 29:1-20. Pl. I-XIII. 17 Jan. 1902.

RUSTS, Plant. Problems in the Study of. [Presidential Address. Botanical Society of America.] J. C. Arthur. Bull. Torr. Bot. Club, 30:1-18. Jan. 1903.

SALIX, branch, host to Heliotium marginatum Clements n. sp. ments n. sp. Bull. Torr. Bot. Club, 30:86. Feb. 1903.

SALIX chlorophylla, wood, host to Psilothecium incurvum Clements n. sp. Bull. Torr. Bot. Club, 30:86. Feb. 1903.

SALIX, wood, host to Dermatea macrospora Clements n. sp. Bull. Torr. Bot. Club, 30:88. Feb. 1903.

SALVIA mexicana, host to Puccinia mitrata Syd. n. sp. Monogr. Uredin 1:294. 15 Nov. 1902.

SAND, wet, matrix for Macropodia urceolata Clements n. sp. Bull. Torr. Bot. Club, 30:91. Feb. 1903.

Scab, *see Rot, Apple, A destructive.* . . .

SCHAFFNER, John H. Laboratory Outlines for the Elementary study of Plant Structures and Functions from the Standpoint of Evolution. Four Phycomycetes showing various habitats. Jour. Appl. Micr. and Lab. Meth. 6:2185-2186. Feb. 1903.

SCHNEIDER, Albert. Contributions to the Biology of Rhizobia. II. The Mobility of Rhizobium mutabile. Bot. Gaz. 35: 56-8. Jan. 1903.

SCHRENK, Hermann von. On the Blue Color of Coniferous Timber. [Abstract.] Science. N. S. 17:458. 20 Mar. 1903.

SCHRENK, Hermann von. A Disease of the White Ash caused by Polyporus fraxinophilus. U. S. Dept. Agr. Bureau Pl. Industry, Bull. 32:1-20. Pl. I-V. 28 Feb. 1903.

SCUTELLINIA chaetoloma Clements n. sp., ad lignum udum et ad acus Piceae. Bull. Torr. Bot. Club, 30:89. Feb. 1903.

SCUTELLINIA dispora Clements n. sp., ad lignum udum muscosumque. Bull. Torr. Bot. Club, 30:90. Feb. 1903.

SCUTELLINIA heterospora Clements n. sp., ad terram muscosam. Bull. Torr. Bot. Club, 30:90. Feb. 1903.

SCUTELLINIA irregularis Clements n. sp., ad trabes putrescentes Piceae sub ponte. Bull. Torr. Bot. Club, 30:90. Feb. 1903.

SCYTOPEZIS Clements n. gen. [Ascomycetes. Est Urnula estipitata, excipulo parenchymatico.] Bull. Torr. Club, 30:87 Feb. 1903.

SCYTOPEZIS stellata Clements n. sp., ad ramum vetustum in terra muscosa sepultum. Bull. Torr. Bot. Club, 30:87. Feb. 1903.

SELBY, A. D. On Cultures of the Leaf-spot of the Grape, Phyllosticta labruscae Thüm. [Abstract.] Science, N. S. 17:264. 13 Feb. 1903.

SENECIO blitoides, host to Allophylaria senecionis Clements n. sp. Bull. Torr. Bot. Club, 30:88. Feb. 1903.

SEPEDONIUM macrosporum Peck n. sp., on some small Clavaria. Bull. Torr. Bot. Club, 30:99. Feb. 1903.

SEPULTARIA heterothrix Clements n. sp., in terra foliosa populeti. Bull. Torr. Bot. Club, 30:91. Feb. 1903.

SHEAR, C. L. Range of Variation in Eutypella glandulosa (Cke.) E. & E. [Abstract.] Science, N. S. 17:257. 13 Feb. 1903.

SHELDON, John L. Cultures of Empusa. [E. grylli.] Jour. Appl. Micr. and Lab. Meth. 6:2212-20. Pl. I-II. Mar. 1903.

SHOEMAKER, Eva May and Waggoner, Alvin. Flies as Carriers of Bacteria. [A laboratory study]. School Science, 3:16-20. April 1903.

SMITH, Erwin F. The Effect of Black rot on Turnips. [Pseudomonas campestris (Pammel) Smith.] U. S. Dept. Agr. Bureau Pl. Industry. Bull. 29:1-20. Pl. I-XIII. 17 Jan. 1903.

SMITH, Erwin F. Completed proof that P. stewarti is the cause of the Sweet Corn Disease of Long Island. Science, N. S. 17:457. 20 March 1903.

SMITH, Erwin F. Observations on a hitherto unreported Bacterial Disease, the cause of which enters the plant through ordinary stomata. [Abstract.] Science, N. S. 17:456-7. 20 Mar. 1903.

SOCIETY for Plant Morphology and Physiology. [Secretary's Report; four mycological papers.] W. F. Ganong. Science, N. S. 17:454-466. 20 Mar. 1903.

SOIL, damp, matrix for Phleboscyphus olivaceus Clements n. sp. Bull. Torr. Bot. Club, 30:94. Feb. 1903.

SOIL, damp in rocky cave, matrix for Phleboscyphus macropus Clements n. sp. Bull Torr. Bot. Club, 30:93. Feb. 1903.

SOIL, damp and shady, matrix for Heteroplegma caeruleum Clements n. sp. Bull. Torr. Bot. Club, 30:92. Feb. 1903.

SOIL, damp, under stones, matrix for Phleboscyphus radicatus Clements n. sp. Bull. Torr. Bot. Club, 30:94 Feb. 1903.

SOIL, and damp wood, matrix for Helvella pileata Clements n. sp. Bull. Torr. Bot. Club, 30:94. Feb. 1903.

SOIL, leafy, poplar, matrix for Sepultaria heterothrix Clements n. sp. Bull. Torr. Bot. Club, 30:91. Feb. 1903.

SOIL, mossy, matrix for Scutellinia heterospora Clements n. sp. Bull. Torr. Bot. Club, 30:90. Feb. 1903.

SOIL, rich and damp, matrix for Heteroplegma crenatum Clements n. sp. Bull. Torr. Bot. Club, 30:92. Feb. 1903.

SOIL, sandy, matrix for Peziza convoluta Peck n. sp. Bull. Torr. Bot. Club, 30:101. Feb. 1903.

SPHAERELLA arundinariae Atkinson *syn. of Mycosphaerella arundinariae, q. v.*

SPHAERELLA baptisiicola Cooke, *syn of Mycosphaerella baptisiicola, q. v.*

SPHAERELLA colorata Peck, *syn. of Mycosphaerella colorata, q. v.*

SPHAERELLA gossypina Atkinson, *syn of Mycosphaerella gossypina, q. v.*

SPHAERELLA leptopleura DeNot., *syn. of Mycosphaerella leptopleura, q. v.*

THAXTER, R. Mycological Notes, 1-2. [A New England Choanephora; Notes on Monoblepharis.] Rhodora, 5:97-108. Pl. 46. April 1903.

THAXTER, Roland. New or Peculiar North American Hyphomycetes. III. Bot. Gaz. 35:153-9. Pl. IV-V. March 1903.

THAXTER, Roland. Notes on the Genus Herpomyces. [Abstract.] Science, N. S. 17:463. 20 March 1903.

TICHOSPORIUM (Sacc.) Clements n. n. [Teichosporella Sacc.] Bull. Torr. Bot. Club, 30:84. Feb. 1903.

TICHOSPORIUM edwiniæ Clements n. sp., ad ramos decorticatos Edwiniæ americanæ. Bull. Torr. Bot. Club, 30:84. Feb. 1903.

TOAD, dung of, host to Heterocephalum aurantiacum Thaxter n. sp. Bot. Gaz. 35:157. Mar. 1903.

TREE trunk, standing, host to Pyropolyporus crustosus Murrill n. sp. Bull. Torr. Bot. Club, 30:113. Feb. 1903.

TYLOSTOMEÆ, Key to the Genera. [C. G. Lloyd.] Myc. Notes. (233). No. 14:133. March 1903.

UREDINEÆ, Culture Methods with. Mark Alfred Carleton. Jour. Appl. Micr. and Lab. Meth. 6:2109-2114. Jan. 1903.

UREDINEÆ, Cultures of, in 1903. J. C. Arthur. Bot. Gaz. 35: 10-23. Jan. 1903.

UREDINEOUS Infection Experiments in 1902. W. A. Kellerman. Jour. Mycol. 9:6-13. Feb. 1903.

UREDO anthephoræ Syd. n. sp., in foliis Anthephoræ elegantis. Ann. Mycolog. 1:22. Jan. 1903.

UREDO rubigo-vera DC. [cultures on Triticum vulgare; but no infection on some other hosts. Arthur.] Bot. Gaz. 35:13. Jan. 1903.

UROMYCES aristidæ E. & E. [successful cultures on Plantago rugelii Dec. Arthur.] Bot. Gaz. 35:17. Jan. 1903.

UROMYCES bouvardiæ Syd. n. sp., in foliis vivis Bouvardiæ leianthæ. Ann. Mycolog. 1:16. Jan. 1903.

UROMYCES deciduus Peck. *syn. of Ravenelia versatilis* (Peck) Diet. [Long.] Bot. Gaz.. 35:118-9. Feb. 1903.

UROMYCES euphorbiæ C. & P. [cultures on Euphorbia humistrata, E. nutans, E. dentata, and E. marginata. Arthur]. Bot. Gaz. 35:12-13. Jan. 1903.

UROMYCES euphorbiæ C. & P. [cultures on Euphorbia nutans; no infection on E. maculata. Probably possesses specialized forms. Arthur]. Jour. Mycol. 8:52-3. June 1902.

YEAST Organisms, On the Behavior of Certain, in Pure and Mixed Cultures. [Abstract.] Wm. B. Alwood. Science, N. S. 17:260. 13 Feb. 1903.

YUCCA glauca, host to Phorcys minutus Clements n. sp. Bull Torr. Bot. Club, 30:84. Feb. 1903.

ZWEI neue Pilze aus Ohio. Francis Bubàk. Jour. Mycol. 9:1-3. Feb. 1903.

NOTES FROM MYCOLOGICAL LITERATURE. V.

W. A. KELLERMAN.

NEW SPECIES OF FUNGI BY CHARLES H. PECK, Bulletin of the Torrey Botanical Club (30:95-101, Feb. 1903), includes 17 species of the higher Fungi belonging to as many genera. A new Genus, namely Mitruliopsis, is proposed. The Morchella described (M. punctipes) is said to be closely allied to M. semilibera but has larger spores and a squamulose stem.

FASCICULUS *II* of VOLUMEN *I*, MONOGRAPHIA UREDINEARUM, P. et H. Sydow, dated 15 Nov. 1902, is the second installment of the genus Puccinia, pp. 193-384, species numbers 303-595, ending with the hosts of family Umbelliferæ. There are eleven full-page plates of outline spore-figures all drawn to the same amplification. Where several Rusts occur on species of the same genus a conspectus specierum is always given. A large number of new species and new names are proposed; of the former six, of the latter three pertain to North American Rusts.

A GOOD MONOGRAPH OF THE RAVENELIAS OF THE UNITED STATES AND MEXICO, by William H. Long, Jr., is published in the Botanical Gazette, 35:111-133, pl. II and III, Feb. 1903. Keys are given to the three genera, and to the species of Ravenelia (19) and of Pleoravenelia (6). Two new genera are proposed, namely, Pleoravenelia and Neoravenelia, the former having six species, the latter one. All the species are fully described, full synonomy given, hosts and localities enumerated. The species are figured on two double-page plates. The preface gives the distribution of the known species, the methods in preparing the spores for examination (boiling in lactic acid), refers to previous work on the group, and makes acknowledgments for assistance.

A DESTRUCTIVE APPLE ROT FOLLOWING SCAB is detailed by H. J. Eustace in N. Y. Agr. Exp. Sta. Bull. 227:367-389, Pl. I-VIII, Dec. 1902. The fungus, which is the cause of the Rot, is Cephalothecium roseum Cda., generally regarded as a saphro-

phyte merely and of no economic importance. The author states that it is a wound parasite and can not go through sound epidermis; hence its association with Scab.

In the Transactions of the Massachusetts Horticultural Society for the year 1902 (pp. 64-73) is printed an interesting lecture by M. B. Waite, delivered Feb. 15, 1902, on the Fungous Diseases of Fruits. After a brief general discussion of the significance of diseases, he outlines the principal facts of a few of the most important orchard diseases.

H. & P. Sydow give in Annales Mycologici No. 2, a list of about a dozen and a half fungi, proposed as new in the last two years, bearing names that have been previously used — therefore replaced by new names. Of these only one (Cercospora sessilis Ell. & Ev. Jour. Mycol. 8:71, June 1902) appeared in an American periodical. Didymostilbe P. Henn. antedates Didymostilbe Bres. et Sacc. (the same fungus) 26 days. Another case of a similar generic name applied to the same species is Allescher's Microdiplodia (1901) and F. Tassi's Microdiplodia (1902).

A Key to the North American species of Lentinus — I, by F. S. Earle, is given in Torreya, 3:35-8, March 1903. The following sections are recognized in the key: Pleuroti, Resupinati, and Mesopodes including Criniti, Lepidei, Pulverulenti, Cochleati, and Cornucopioides.

On a Canker of the Oak, (Quercus rubra), Professor M. C. Potter, University of Durham Philosophical Society, Proceedings, vol. II, part 2, 1902, gives an account of a Stereum for which the name of Stereum quercinum is proposed.

The Brown Rot Disease of the Redwood, by Hermann von Schrenk, forms a part of U. S. Dept. Agr. Bureau of Forestry, Bulletin 38 (pp. 29-31, pl. X & XI), but at present no one fungus can be determined to be the cause of this disease. It is surmised that the cause may be the same as that of the Pine Rot of Libocedrus decurrens, namely, Polyporus libocedris.

Uromyces occidentalis Dietel n. sp., on Lupinus latifolius, L. argenteus, and L. sileri, is published in Beiblatt zur Hedwigia, 42:(98), and other species are critically considered in the same article — the title being Ueber die Uromyces-Arten auf Lupinen, von P. Dietel.

Annales Mycologici, Vol. I. No. I, Jan. 1903 (pp. 1-96; pl. I-II), H. Sydow, contains the following articles: Vorwort; Ueber die auf Leguminosen lebenden Rostpilze und die Verwandtschaftsverhältnisse der Gattungen der Pucciniaceen (P. Dietel); Diagnosen neuer Uredineen und Ustilagineen nebst Bemerkungen zu einigen bereits bekannten Arten (H. & P. Sydow); Notae mycologicae (P. A. Saccardo); Ueber eine neue Pilzkrankheit

auf der Eberesche (Sorbus aucuparia) (A. von Jaczewski); Ueber das Vorkommen von Neocosmospora vasinfecta Erw. Smith auf Sesamum orientale (A. von Jaczewski); Ueber die auf Anemone narcissiflora auftretenden Puccinien (H. & P. Sydow); Asteroconium saccardoi Syd. nov. gen. et spec. (H. & P. Sydow); Der Mucor der Hanfrötte, M. hiemalis nov. spec. (C. Wehmer); Riccoa aetnensis Cav. Nouveau genre de Champignons du Mont Etna (F. Cavara); Une Mucorinnée purement conidienne, Cunninghamella africana (L. Matruchot); Un nouveau genre de Chytridiacées; le Rhabdium acutum (P. A. Dangeard); and Fungi polonici (J. Bresadola).

AN ENUMERATION OF "FUNGI AUSTRALIENSIS," VON P. HENNINGS, with descriptions of several new species, occupies 16 pp. in the März Heft of Beiblatt zur Hedwigia (1903); the same containing also the following new genera: Dielsiella (Hysteriaceæ); Pritzeliella (Hyalostilbaceæ).

NEW OR PECULIAR NORTH AMERICAN HYPHOMYCETES, III, BY ROLAND THAXTER (Botanical Gazette, 35:153-9, pl. IV-V, March 1903), is an admirable account of two new genera, Heterocephalum with one species, and Cephaliophora with two species. These coprophilous species were obtained from Jamaica, Porto Rico, and other tropical countries, and have been studied under cultivation for ten years. No ascigerous form was produced. The excellent figures of these striking forms suggest and illustrate the advantage, if not necessity, of figuring everything proposed as new. If cuts could be published invariably in the botanical journals, it would be a wise thing to bring nothing to light unless properly illustrated; and may the time speedily come when a congress of botanists can properly and effectually enact and enforce such a law.

SOME TALUS CLADONIA FORMATIONS ARE INTERESTINGLY AND INSTRUCTIVELY discussed by Bruce Fink in the Botanical Gazette, 35:195-208, March 1903. It is based on work done in 1897 on the north shore of Lake Superior, supplemented by study in the same region in 1902. These rare but interesting Lichen Societies are designated as the Cladonia gracilis formation of shaded talus, and the Cladonia rangiferina formations of shaded talus. Five full-page half tones are used for illustrations.

JOHN L. SHELDON GIVES A VERY INTERESTING ACCOUNT of his Cultures of Empusa, in the Journal of Applied Microscopy and Laboratory Methods (6:2012-20, March 1903), illustrated by two plates. The work was carried on in connection with the experiments with the South African Locust Fungus, Mr. Sheldon preparing the cultures of the latter to be sent out into different parts of Nebraska, in 1902. Though that fungus did not seem to be the cause of the death of grasshoppers, an Empusa (E. grylli)

was found which was the destructive agent. Cultures were made in bouillon-agar, better success attained when hyphal bodies were used rather than conidia, but it was a very difficult matter to obtain pure cultures. The demonstration that Empusa can be grown artificially is important, yet Mr. Sheldon is not very sanguine as to its great economic importance. He says that "while little may be expected from an economic standpoint, there is something to be gained from a study of its cultural characters both morphologically and taxonomically."

A POPULAR ACCOUNT OF ANTHRACNOSE (Colletotrichum lagenarium (Pass.) Ell. & Hals.), Downy Mildew (Plasmopara cubensis (B. & C.) Humph.), Timber Rot (Sclerotinia libertiana Fckl.), Damping Off (Pythium debaryanum Hesse), and Powdery Mildew (Erysiphe polygoni DC.) — the most common diseases in Massachusetts occurring on Cucumbers—is published by George E. Stone in the Agr. Exp. Sta. Bulletin No. 87, pp. 34-40, Feb. 1903.

WILLIAM ALPHONSO MURRILL CONTRIBUTES HIS SECOND PAPER ON THE POLYPORACEÆ (the genus Pyropolyporus) to the Bulletin of the Torrey Botanical Club, 30:109-120, Feb. 1903. The name of Phellinus by Quélet, who first separated the European species into a distinct generic group, is regarded as untenable (preoccupied by Phelline in fam. Ebenaceæ) and hence Pyropolyporus is proposed. A synopsis (key) is given of the 18 N. A. species; also full notes and range-stations. Ten species are described as new.

NOVA ASCOMYCETUM GENERA SPECIESQUE, auctore F. E. Clements, quattuor genera et triginta quattuor species in Bulletin of the Torrey Botanical Club, 30:83-94, Feb. 1903, descripta sunt. Explicatio et adnotationes Latine expressæ sunt. Quædam rationes quæ ab eodem auctore propositæ erant in "Greek and Latin Nomenclature" (University Studies, Nebraska 3:1-86) Dec. 1902, hic adhibitæ sunt. Botanica nomina, quia scilicet non pura Latina verba vel quia hybrida sint, reicit; quam autem rationem non omnes botanici approbabunt. Neottiopezis pro Neottiella Cook, nomine hybrido, substituta est. Phleboscyphus pro Paxine nomine hybrido, præpositum est.

THE SECRETARY'S REPORT, BY W. F. GANONG, of the Washington meeting of the Society for Plant Morphology and Physiology contains abstracts of the following four mycological articles: Notes on the Genus Herpomyces (Thaxter); On the 'Blue' Color of Coniferous Timber (von Schrenk); P. stewarti the Cause of Sweet Corn Disease of Long Island (Erw. F. Smith); and a Bacterial Disease, the cause of which enters the plant through Stomates (Erw. F. Smith).

THE PAPERS IN ANNALES MYCOLOGICI No. 2 are as follows — Bresadola, Ab. J.; Fungi polonici a cl. Viro B. Eichler lecti; Ward, H. Marshall: Further Observations on the Brown Rust of the Bromes, Puccinia dispersa (Erikss.) and its adaptive parasitism; Buchholtz, Fedor: Zur Morphologie und Systematik der Fungi hypogaei; Sydow, H. u. P.: Die Mikrosporen von Anthoceros dichhotomus Raddi, Tilletia abscondita Syd. nov. spec.; Sydow, H. u. P.: Nomenklatorische Bemerkungen zu einigen kurzlich neu beschriebenen Pilzarten; Cavara, Fr.; A. N. Berlese, Necrologue.

THE MYCOLOGICAL ARTICLES in Hedwigia, Heft 1, Bd. 42, 15 Feb. 1903, are as follows: Ueber gelungene kulturversuche des Hausschwammes (Merulius lacrymans) aus seinen Sporen, von Dr. Alfred Möller; Einige neue und interessante deutsche Pezizeen II, von P. Hennings; Die Arten der Gattung Disciseda Czern, von L. Hallós; Ruhlandiella berolinensis P. Henn. n. gen. et n. sp., eine neue deutsche Rhizinaceae; Bermerkungen ueber einige Puccien, von Fr. Bubák; and Septoria spergulariae Bres. n. sp., von R. Staritz.

NO MORE INTERESTING LITTLE ARTICLE could be written than Where Lichens Grow, by the late Thomas A. Williams, reprinted from the Asa Gray Bulletin in the December number of the Plant World (5:241-3. Dec. 1902.) In answer to "Say, Mister, what are you getting off them rocks?" and "They ain't alive, are they?" Professor Williams made explanations that stimulated the interest of the boys who abandoned fishing and became enthusiasts in the collection and study of lichens. The article is concluded along entertaining and instructive lines suggested by the title, — among other things the fact is mentioned that Lichens may have peculiar habits, as old iron, clothes, bones, and the like. "The skull of a buffalo was found literally covered with species of Placodium, Lecidea, and Physcia, a single jaw-tooth bearing as many as five distinct species."

G. BRIOSI AND R. FARNETI DESCRIBE A NEW SPECIES, namely, Ovularia citri, in fructibus Citronum, Atti dell Inst. Bot. dell Univ. di Pavia, N. S. vol. VIII.

NEARLY A DOZEN FORMS ARE FULLY DESCRIBED AND FIGURED under the title of Notes on Certain Cladonias, by Bruce Fink and Mabel A. Husband, Bryologist, 6:21-7, March 1903.

CHARLES J. CHAMBERLAIN, SECRETARY OF SECTION G, BOTANY, A. A. A. S., gives the abstracts of papers presented before that body at the Washington Meeting, Science, N. S. 17:257-265, 13 Feb. 1903. The mycological papers were by C. L. Shear, F. L. Stevens, Wm. B. Alwood, E. J. Durand, W. A. Orton and A. D. Selby.

JOURNAL OF MYCOLOGY

A Periodical Devoted to North American Mycology. Issued in February, May, October and December. Price, $1.00 per Year. To Foreign Subscribers $1.10. Edited and Published by

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NOTES.

IT IS not quite clear why mycological papers should be presented before three or four or more American botanical societies — or rather to go to the real root of the matter, why there should be the numerous organizations as there are, unrestricted or national in scope and indistinguishable in objects and methods.

WOULD it not be most rational, and from every point of view far preferable to have for presentation and discussion of the *scientific papers* but one national association — though of course the more local clubs throughout the country the better perhaps. This general organization might well be Section G, A. A. A. S. At each annual meeting as many divisions could be made as necessary and convenient for the more satisfactory reading and consideration of the papers grouped according to subjects.

WHY should not the various botanical societies (other than local organizations) *exist for* and be *devoted exclusively* to their definite restricted subjects — meeting *not* for hearing papers on general scientific subjects or even the details of research work, *but* for the purpose of discussing, improving, extending methods, terminology, publication, indexing, etc. For example, the general purpose of promoting research and publishing the results to which we may perhaps say the Botanical Society of America is in the main committed, is a most worthy object; why is that not sufficiently ambitious? Why should the papers dealing with all manner and scope of research work be *read* before it? Ditto, for the other botanical societies too numerous to mention. Section G, A. A. A. S. would furnish an audience patient and long suffering.

AND now the Mycologists (Systematists) are talking of organizing; having a society of their *own!* Certainly a commendable project — provided (in our humble opinion) that the purpose is, *not* to read scientific papers to themselves, *but* to discuss new or disputed topics, subjects of technical interest; to consider questions peculiar to systematic Mycology; to ponder the distressing matter of nomenclature, as well as terminology, types, publication and illustration of new species, indexing, journalistic work, and a raft of other topics more or less exclusively pertaining to our business as specialists.

Yours truly
F. S. Earle

Journal of Mycology Portraits with Facsimilie Autographs.

Journal of Mycology

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SOME WESTERN SPECIMENS.

A. P. MORGAN.

The following rarities occurred in a package of specimens from W. B. Anderson, Cumberland, B. C.

1. Dothidea wittrockii Eriksson, Fung. Scand. No. 40. Phyllachora wittrockii Saccardo, Sylloge II, 601.

This fungus grows at the extremities of the branches of Linnaea borealis. It has been found in the White Mountains. See article by Dr. Farlow in Appalachia, Vol. III, 247. These specimens however, were infertile. The specimens from British Columbia are well matured, affording both spores and asci.

2. Cylindrodendrum album Bonorden, Handbuch, p. 98, Fig. 127.

A curious white mould, Hyphomyces. I do not know that it has been found in this country before.

3. Dianema corticatum Lister, Mycetozoa, p. 205.

A Myxomyces, close akin to species of Perichaena. Lister's specimen was found in Norway. Dianema harveyi Rex, the type species of the genus was found in Maine. All the species appear to be very rare.

NOTE ON CORTICIUM LEUCOTHRIX, B. & C.

A. P. MORGAN.

I have recently gathered specimens of this curious fungus. It was first described by Berkeley in the Notices of N. A. Fungi; it is No. 284. The hymenium is truly "beset with delicate white bristles" as stated by Berkeley. These the hymenium had parted with when Massee redescribed the same specimen in the Journal of the Linnean Society, Vol. XXV, 133.

The species was referred to the "subgenus" Coniophora, by reason of "Hymenium pulverulent; spores large, profuse, colored," Grevillea, VIII, 89. It stands here Corticium (Coniophora) leucothrix B. & C. Massee writes it Coniophora leucothrix Cooke, in the Journal of the Linnean Society.

The peculiarity of the plant is the association of the white cystidia with the brown spores; the former pertain to the genus Peniophora, the latter are characteristic of the genus Coniophora. The cystidia of Corticium leucothrix are similar to those generally in the species of Peniophora; they are terete, tapering slightly to the apex, roughened with irregular warts, projecting 50-90 mic. beyond the surface of the hymenium, 12-15 mic. in thickness. The spores are subelliptic, inequilateral, yellow-brown, pellucid, 11-14 x 6-7 mic.

The cystidia in the genus Peniophora, after maturity, soon disappear, especially when the plants continue to be exposed to the weather; then the specimens are usually referred to Corticium. It can easily be shown that this has been done in more than one instance.

THE ACCENTUATION OF MYCOLOGICAL COMPOUND NAMES.

IVY KELLERMAN.

It seems that the perplexing question of correct formation and derivation is not the only matter in nomenclature which disturbs the botanist. The accentuation of names gives trouble now and again, in spite of the apparently simple rule for all anglicized Latin and Greek scientific words, that the Latin rule is to be followed, namely: accent the second syllable from the end if it be long; if it is short, accent the preceding one. But since these words are chiefly Greek compounds, some explanation of the laws underlying their accent before they suffer transliteration may replace apparent dogmatism with reasonableness in the mind

of the long-suffering mycologist, even though no practical rules are added.

By comparison of the languages of the Indo-European family, many apparently isolated facts are explained, and certain uniformities proved to exist. These uniformities may therefore be considered indications of the state in prehistoric times, before the development into separate languages. The members into which the Indo-European family separated are believed to be the following: Indo-Iranian (i. e., Sanskrit, Avestan, Persian), Armenian, Albanian, Greek, Italic, Celtic, Teutonic, and Balto-Slavic.

There are certain Indo-European laws of accentuation which are seen to be distinct from changes occurring in the individual languages. One of the most general laws pertaining to nouns and adjectives may be stated as follows: Compounds, consisting of one word dependant upon another in a grammatical relation, keep the accent of the dependant word for the accent of the compound as a whole. The survival of the law to the present time is shown by such examples from the Teutonic branch as English púff-ball, ápple-tree, bláck-berry, or German ápfel-wein, sónnen-blume, blaú-beere. From the Balto-Slavic branch may be adduced Lithuanian vasará-sziltis "summer warmth", and sáulzhole "heliotrope," and Russian né-vidko "*not* to be seen." A moment's consideration will show how logical this law is. The dependant word, usually an adjective, or a noun in a case relation, brings a new idea or broadens the one already present in the word to which it is united, and so it naturally receives the greater amount of stress. The rule holds whether the dependant element precedes or follows the foundation word. This suggests a distinction which must here be emphasized, and which can be made plain by recalling a favorite example of two Greek words which differ only in their accent. One type is shown by metro-któnos "mother-slayer," developed by a secondary law from the original metro-ktonós. This class can be left out of consideration, when mycological nomenclature is the point of interest. The other class is exemplified by metró-ktonos "having death at a mother's hands", "mother-slain", the difference in sense being shown solely by its different accent. This is the type which botanical terminology for the most part follows.

In Sanskrit no secondary development obscures the law, and examples from this language are most plain: sáhasra-mukha, "having a thousand outlets", híranya-keshas, "gold-haired" (*i. e.*, "Gold-hair"), hári-ashvas, "having yellow horses." Greek examples are polý-porus from polý-pórus, and aglaó-spora, from aglaó-sporá, a correctly made new formation.

In Greek, however, which is of especial interest to the botanist, certain changes took place. A law developed that no accent might recede farther from the end of a word, either simple or

compound, than the third syllable from the end. This is the case if the quantity of the last syllable be short; if it is long, the accent may recede only as far as the second syllable from the end. It will at once be recognized that this secondary law often shifts the accent of the emphatic word in a compound to a different syllable from the one upon which it originally rested. For instance, myrío-stóma would in prehistoric Greek have become myrío-stoma, like the Sanskrit sáhasra-mukha of almost the same meaning quoted above. But, in the earliest records we have, Greek had already completed the shifting due to the law of recessive accent, and therefore we find myrió-stoma. So also carýo-sporá, if it had occurred in early Greek, would have been carýo-spora. The latinization of most of the mycological words of this type reduces the number of clear examples for illustration.

When the foundation word is more than three syllables in length, or has a long final syllable, it is evident that the law of recessive accent must withdraw the emphasis completely from the preceding dependant word. An example of this is poly-céphalum, which would have been polý-cephalum in prehistoric Greek, from the elements polý-cephalé, which naturally had to undergo such a compromise when they became united into one word. A still more apparent example is cylindro-céphalum; the first of its component parts is cýlindro-, which likewise had to give up its accent entirely, since it preceded a three-syllabled word in the combination.

NEW SPECIES OE FUNGI FROM VARIOUS LOCALITIES.

J. B. ELLIS AND B. M. EVERHART.

SEPTORELLA* SORGHI E. & E. On leaves of Sorghum halapense, Tuskegee, Ala. (Prof. Geo. W. Carver, 383).

Perithecia gregarious on dry, dead areas of the leaves, superficial, globose, coarsely tubercular-roughened, subcarbonaceous, 80-100 μ diam. Sporules elongated-fusoid, slightly curved, 3-4-nucleate becoming faintly 3-4-septate, yellowish-hyaline, 40-55 x 2μ. Basidia very short.

MACROPHOMA ULMICOLA E. & E. On dead elm twigs, Riverside, Ill., November, 1902. (E. T. & S. A. Harper, No. 781.) Comm. Elam Bartholomew.

Perithecia thickly scattered, white inside, apex erumpent. Sporules globose or shortly elliptical, large 15-20μ in the longer

* The genus Septorella was published in Hedwigia 1897, p. 241. The name is badly chosen, differing only in a single letter from Septoriella Oudemans, in his Contributions à la Mycol. Flora des Pays-bas, XIII, p. 52, but the fungus described by Oudemans is very different from the Septorella of Allescher, the perithecia in Prof. Oudeman's genus being enclosed in a dothideaceous stroma. The sporules in the species published by Allescher are smaller (18-22 x 1 μ) than in s. sorghi.

diameter. Probably the macrostylosporous stage of some Botryosphaeria.

DIAPORTHE (CHOROSTATE) CONGESTA E. & E. On dead limbs of Pirus americana. Sailors' Encampment, Mich., August, 1889. (E. T. & S. A. Harper, No. 784.) Comm. E. Bartholomew.

Stroma conic-globose, ½ cm. diam., formed of the scarcely altered substance of the bark which is raised into subconical protuberances. Perithecia globose, ½ mm. diam., lying in the bottom of the stroma and partly sunk in the subjacent wood, 20-30 in a stroma, abruptly contracted into slender necks which rise through the substance of the stroma, their obtuse slightly enlarged, hemispherical, papillate ostiola bursting through the epidermis in a densely crowded fascicle. Asci clavate-cylindrical, 60x6 μ. Sporidia 8 in an ascus, oblong-fusoid, subbiseriate, hyaline, 3-4- nucleate, becoming uniseptate, 11-13 x 2½-3 μ.

SOLENOPEZIZA SYMPHORICARPI E. & E. On decorticated, weather-beaten limbs of Symphoricarpus sp., Steamboat Springs, Colo. July 15, 1902. (Comm. E. Bartholomew.)

Ascomata scattered, centrally attached, about 1 mm. diam., clothed with a dense coat of dark-brown, coarse, septate hairs, 3-4 μ diam. When fresh the ascomata open to slightly concave or nearly plane with the margin slightly incurved, nearly closed when dry. Asci clavate-cylindrical, subsessile, 50-60 x 6-7 μ, with filiform paraphyses. Sporidia biseriate, fusoid-oblong or subclavate oblong, becoming faintly uniseptate but not constricted. When dry of about the same color as Peziza arida Phill. which it resembles but is not so distinctly hysteriform-incurved.

CIBORIA DALLASIANA E. & E. On a decaying log, Mt. Pocono, Pa. August, 1902. (Mrs. E. M. Dallas, No. 22.)

Ascoma shallow cup-shaped, nearly discoid, glabrous, margin entire, soon incurved, about 1 cm. diam., cartilagino-carnose, elastic, dirty grayish-white and faintly marked with radiating wrinkles extending from the summit of the stipe to the margin of the cup, disk rather darker, dull watery white, becoming liver-color. Asci cylindrical, 150 x 8-10 μ. Paraphyses about as long as the asci, mostly recurved and spatulate-swollen at the tip. Sporidia biseriate above, oblong-fusoid, slightly curved, subinequilateral, hyaline, filled with granular matter, 22-32 x 5-6 μ. Stipe slender, subequal, or slightly enlarged at base, concolorous, 1-1½ cm. x about ½ mm.

HELOTIUM PARASITICUM E. & E. Parasitic on some old Valsa?, Harraby, Ontario, Canada, Sept., 1902. (E. T & S. A. Harper, No. 609.) Com. E. Bartholomew.

Stipitate, subcespitose or solitary, orange-yellow. Ascoma ¼-½ mm. diam., concave, glabrous, margin subacute, stipe central, short, not exceeding 1 mm. Asci clavate-cylindrical, 45-50 x

4-5μ, paraphysate. Sporidia subbiserate, ovate-oblong, hyaline, continuous, 4-4½ x 1½-1½ μ.

This is different from Peziza sphaenicola Schw. which is described as strigose and brown with a white margin.

TREMATOSPHAERIA CLAVISPORA E. & E. On dead limbs of Artemisia tridentata, Steamboat Springs, Colorado, July, 1902. (Bethel 937.)

Scattered, superficial, easily deciduous, ovate-conical, not polished ½-¾ mm. high or broad. Asci clavate-cylindrical, stipitate, p. sp. 70-75 x 11-13μ, with abundant filiform paraphyses. Sporidia biseriate, clavate fusoid, slightly curved, 6-septate and slightly constricted at 2 or 3 of the middle septa, subhyaline at first, becoming yellow-brown. Seems easily distinct from any of the described species. The prominent conic-cylindrical ostiolum is soon deciduous, leaving the perithecia broadly perforated.

CUCURBITARIA TYPHINA E. & E. On dead stems of Rhus typhina, Harraby, Lake Resseau, Ont., Canada, Sept. 1902. (E. T. & S. A. Harper, No. 607.) Com. E. Bartholomew.

Perithecia subglobose, about ½ mm. diam., bursting through the bark 2-6 together. Ostiolum papilliform, inconspicuous, sometimes slightly compressed. Asci cylindrical, 120-150 x 15 μ, attenuated below into a stipe-like base, 8-spored. Paraphyses obscure or wanting. Sporidia uniseriate, oblong or oblong-elliptical, obscurely about 6-septate and muriform, scarcely constricted, straw yellow, 22-27 x 12μ, finally opake with the end cells subapiculate and hyaline.

The perithecia are of a firm texture and white inside. This differs from C. stenospora E. & E. on Rhus diversiloba in its broader sporidia.

SPHAERELLA (MYCOSPHAERELLA) CAESPITOSA E. & E. On leaves of Quercus virginiana, Meridan, Texas, Apr. 1901. (W. H. Long, No. 957.) Com. E. Bartholomew.

Hypophyllous. Perithecia minute (65-75μ), subconfluent-cespitose, 3-5 together forming a little tuft surrounded by the ruptured epidermis, the separate tufts collected in groups 1-3 mm. across. Asci subcylindrical, 35-40 x 5-6μ diam. Sporidia subbiseriate, oblong-fusoid, 1-septate, not constricted, 8-10 x 2½-3μ, hyaline.

SPHAERELLA (MYCOSPHAERELLA) SALICINA E. & E. On dead shoots of Salix cordata, Rooks Co., Kansas, May, 1902. (Bartholomew, 2949.)

Perithecia scattered or collected in little groups of 3-5, ovate, ½-⅝ mm. diam., and a little more than that in height, seated on the surface of the inner bark, and raising and rupturing the thin epidermis to which they adhere and come off with it when the epidermis is peeled off. It is then seen that they are strongly collapsed from below. Asci (p. sp.) oblong, 40-45 x 8-10 μ.

Sporidia biseriate or oblike, oblong-fusoid, hyaline or with a yellowish tint, uniseptate in the middle and slightly constricted, 14-18 x 4-6μ.

METASPHAERIA SILPHII E. & E. On dead stems of Silphium integrifolium, Rooks Co., Kansas, May 1902. (Bartholomew 2951).

Perithecia gregarious, subcuticular becoming superficial when the cuticle falls away, ovate, rough except the upper part and the papilliform ostiolum, soon collapsing to cup-shaped, 150-200 μ diam. Asci cylindrical or clavate-cylindrical, 45-55 x 6-7 μ, rather abruptly contracted into a short, stipe-like base, paraphysate. Sporidia biseriate or oblike, fusoid-oblong, 2-3-septate, constricted at the septa, 12-16 x 3½-4μ, slightly brownish. In some perithecia the sporidia are 2-septate and in others all 3-septate.

CRYPTOVALSA PIRINA E. & E. On dead limbs of Pirus coronaria, River Forest, Ill. Oct. 1902. (E. T. & S. A. Harper, 600.) Com. E. Bartholomew.

Stroma effused, blackening the inner bark and the surface of the wood beneath. Perithecia ovate-globose, with thick, coriaceous walls, the inner cavity mostly less than ½ mm. diam., collected in valsoid groups (generally 4-8), with short necks, their entire or faintly sulcate, obtuse or subconical ostiola erumpent in an acutely elliptical or round disk which bursts out through short, transverse cracks in the thick epidermis. Asci polysporous, on long, slender pedicels, p. sp. 65-70 x 10-12 μ. Sporidia allantoid, yellowish, not strongly curved, 11-13 x 1½-2μ.

This differs from C. protracta (Pers.), C. nitschkei Fckl., and C. rabenhorstii (Nitsch.) in its ostiola being collected in an erumpent disk.

VALSELLA MINIMA NIESSL. Not. Kr. Pyr. p. 53. What we take to be this species has been sent by Prof. E. T. Harper, from Indiana, on Sambucus canadensis.

Stroma ½-¾ mm. diam., sunk in the inner bark which is uniformly blackened on the surface. Perithecia 3-6 in a stroma, angular from mutual pressure, white inside, minute, about 200 μ in diameter. Sporidia 8-10 x 1½-2μ. Ostiola scarcely penetrating the minute, white, farinaceous disk.

ANTHOSTOMELLA THYRIDIOIDES E. & E. On decorticated, weather-beaten limbs of Populus deltoides, Rooks Co., Kansas. July 1902. (Bartholomew 2969).

Perithecia gregarious, one or two together, globose, thin walled, sunk in the wood without any definite stroma and raising the surface of the wood into short, subelongated pustules pierced by the papilliform ostiola and blackened by the discharged sporidia. Asci clavate-cylindrical, 70-75 x 10-12μ, paraphysate. Sporidia oblong-cylindrical, continuous, brown, 15-22 x 4-6 μ Has the aspect of Thyridium.

MYRMAECIUM FRAXINEUM E. & E. On dead limbs of Fraxinus viridis (?). River Forest, Ill. Oct. 1902. (E. T. & S. A. Harper, 599.) Com. E. Bartholomew.

Perithecia ovate-elliptical, 100-125μ diam., slightly sunk at first in a soft, whitish stroma, soon erumpent in densely crowded clusters, 3-1½ mm. across, flattened above and erumpent through the epidermis, black outside, white within. Asci cylindrical, p. sp. about 75 x 8-10 μ, paraphyses, if any, very evanescent. Sporidia uniseriate or biseriate above, ovoid, hyaline with a distinct olivaceous tint, uniseptate and more or less constricted at the septum, 12-14 x 5-6μ.

This comes very near M. endoleucum Sacc. and may not be distinct from that species, the only difference being in the subolivaceous, constricted sporidia.

DIATRYPELLA VETUSTA E. & E. On a decorticated, partly decayed stick lying on the ground, River Forest, Ill. Oct. 1902. (E. T. & S. A. Harper, No. 596.) Comm. E. Bartholomew.

Stromata thickly scattered, erumpent-superficial, ¾-1½ mm. diam., black, uneven above from the slightly prominent, obtuse, smooth ostiola. Asci clavate-cylindrical, 75-80 x 8-10μ, paraphyses obscure. Sporidia allantoid, yellowish, crowded in the asci, slightly curved ends obtuse.

A faint but deeply penetrating black line surrounds the part occupied by the fungus.

MELANOPSAMMA UTAHENSIS E. & E. On dead stems of Actaea rubra, Salt Lake, Utah. Aug. 1903. (A. O. Garnett, No. 287.)

Perithecia gregarious, at first covered by the cuticle, soon superficial, subglobose, becoming slightly depressed or flattened at the top, about ½ mm. diam. Asci clavate cylindrical, narrowed at the base into a short stipe, 75 x 12μ, Paraphyses evanescent. Sporidia subbiseriate, clavate oblong, hyaline, uniseptate, constricted near the middle, slightly curved, 25-30 x 6-7μ, lower cell narrower.

M. caulicola Rehm on Salvia is the (only ?) other caulicolous species described. The conic-papilliform ostiolum with a round opening will separate it from Lophiosphaeria.

CERCOSPORA PLATANICOLA E. & E., Jour. Mycol. 3:17. Feb. 1887.

Well matured specimens of this species collected at Mingo, W. Va., Sept. 1903, have the conidia larger, 30-55 x 4-5μ and smoky hyaline. The spots become confluent and the entire leaf becomes brown and dead.

ELFVINGIA FOMENTARIA (L.) Murrill.

(From photograph of specimens on Betula lutea, collected in the Cheat Mountains of West Virginia. Reduced to nearly one-fourth natural size.)

MINOR MYCOLOGICAL NOTES. I.

W. A. KELLERMAN.

It may possibly be worth while to put on record occasional notes on fungi of more or less interest, here and there observed incidentally. These may pertain to distribution, habit, habitat, or any other single phase — but paragraph-headings will be used to enable the reader to select any note that may be of probable interest.

PUCCINIA VERATRI.—This Rust was observed in enormous abundance in the Cheat Mountains, alt. 3,600 ft., near Cheat Bridge, Randolph Co., West Virginia. Along the Cheat River the host occurred in great quantity, and every plant noticed was affected. Usually every leaf contained the Rust, and mostly the entire surface was thoroughly blackened by the parasite.

ELFVINGIA FOMENTARIUS (FOMES FOMENTARIUS).—This Polypore is a widely distributed species, Europe, Asia, North America; said to occur on Birch and Beech. "*Hab.* ad Fagos abunde optimus, vegetior copiosum fomentum molle quotannis edens, minor, macrior et durior ad Betulas etc." (Saccardo). It was noticed as the commonest species (save perhaps here and there the Elfvingia megaloma (Polyporus leucophæus, or Fomes applanatus as usually recorded) in the Mountains of West Virginia. In the uncleared forest regions old trees and prostrate trunks were the conspicuous matrix for the saprophyte — but it occurred almost exclusively on the Yellow Birch, a very common tree in the section referred to. It was seen, but very rarely, also on Beech and Nyssa. The climate can perhaps as well as the host, be regarded as very agreeable to this conspicuous fungus; on numerous trunks, standing or occasionally felled, young plants and those of mature age — say twenty years — were seen. It was thought that a photograph of some of the plants might not be amiss in connection with a note—and on the page opposite is given a half-tone reproduction (Plate III) showing some young plants, one with the hymenium in view, and a sample of one of age.

LATE INFECTION OF PHYLLOSTICTA ASIMINÆ.—A quantity of this fungus was found this season coming to maturity as late as the middle of October. It had been observed in the same locality in this and previous years developing its spores at the usual time—early in the summer. A portion of the thicket of papaw bushes of considerable area was removed by plow and road scraper during the season and then left undisturbed, when young sprouts appeared in great abundance. It was on these leaves, developed late in the season, that extensive infection was noticed, and careful examination showed that the

perithecia were full of ripe or nearly ripe spores—the usual severe frosts of September and October disturbing the life neither of host nor parasite. The perithecia were very numerous on the spots, often more abundant than the usual infection. Very many of them appeared at both the upper and lower surface of the leaves—which is not common for this species. The original description, as published by Ellis and Kellerman, was based on ma-

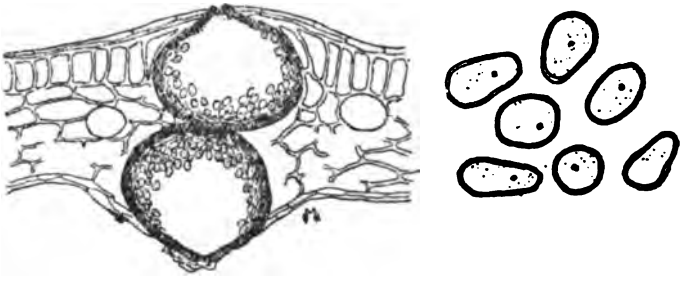

Fig. 8. Phyllosticta asiminae Ell. & Kellerm.

terial collected in July (1883), in Fairfield County, Ohio; in this the perithecia were epiphyllous, and the spores were found to be 7-9x5-6 μ. The recently collected October material showed spores with the characteristic color but mostly 10 μ in length and 6 or 7 μ in width. No figures were furnished originally and hence a sketch is presented here. The leaf section shows a perithecium situated near each epidermal surface; highly magnified outline figures of the spores appear at the right.

Rust on Muhlenbergia Diffusa. — It was stated on page 109 of this Journal that cultures had demonstrated the connection of Puccinia muhlenbergiae Arthur on Muhlenbergia mexicana and Aecidium hibisciatum Schw. on Hibiscus moscheutos (to which may be added Hibiscus militaris). But strange as it may seem, the Puccinia muhlenbergiae Arthur on *Muhlenbergia diffusa,* also used in the cultures (which will be reported in detail later) yielded only negative results. For the present therefore the name Puccinia hibisciata (Schw.) Kellerm. (Jour. Mycol. 9:110, May, 1903) can be used only for the Rust on Muhlenbergia mexicana, at any rate not that occurring on *Muhlenbergia diffusa.* Additional cultures will be instituted next season; material will be furnished to any experimenters who may care to cooperate in this interesting case.

OHIO FUNGI. FASCICLE VIII.

W. A. KELLERMAN, OHIO STATE UNIVERSITY.

List of Species and Hosts.

141. Cercospora caulophylli Peck, on Caulophyllum thalictroides (L.) Michx.

142. Cercosporella cana Sacc., on Erigeron annuus (L.) Pers.

143. Gloeosporium nervisequum (Fuck.) Sacc., on Platanus occidentalis L.

144. Melampsora populina (Jacq.), on Populus grandidentata Mx.

145. Melampsora populina (Jacq.), Lév., on Populus tremuloides Mx.

146. Phyllosticta labruscae Thüm., on Vitis vulpina L.

147. Plasmopara australis (Speg.) Humph., on Sicyos angulatus L.

148. Puccinia caricina DC., on Carex comosa Boott.

149. Puccinia caricina DC., on Carex squarrosa L.

150. Puccinia caricis-asteris Arth., Aecidium, on Aster paniculatus Lam.

151. Puccinia caricis-asteris Arth., Aecidium, on Aster tradescanti L.

152. Puccinia glechomatis DC., on Agastache nepetoides (L.) Kuntze. (Lophanthus nepetoides Benth.)

153. Puccinia helianthi Schw., on Helianthus hirsutus Raf.

154. Puccinia violae (Schum.) DC., Aecidium, on Viola scabriuscula (T. & G.) Schw.

155. Puccinia violae (Schum.) DC., on Viola striata Ait.

156. Septoria erigerontis Peck, on Erigeron ramosus (Walt.) B. S. P.

157. Septoria rhoina B. & C., on Rhus radicans L.

158. Stichopsora solidaginis (Schw.) Diet., on Solidago ulmifolia Muhl.

159. Stichopsora vernoniae (B. et C.) Diet., on Vernonia fasciculata Mx.

160. Uromyces euphorbiae Cke. & Peck, on Euphorbia nutans Lag.

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141. Cercospora caulophylli Peck.

On Caulophyllum thalictroides (L.) Michx.

Sugar Grove, Fairfield Co., O. May 16, 1903.

Coll. W. A. Kellerman.

"Cercospora Caulophylli, *n sp.* Spots irregular or suborbicular, dark-brown or grayish with a dark-brown margin; flocci hypophyllous, tufted, flexuous, nodulose above, colored, rarely branched; spores oblong or cylindrical, with one to three septa, colorless, .0008 in. to .0012 in. long, .00025 in. to .0003 in. broad. Living or languishing leaves of cohosh, *Caulophyllum thalictroides.*" Chas. H. Peck, Annual Report of the State Museum, New York, 33:30. 1880.

142. Cercosporella cana Sacc.

On Erigeron annuus (L.) Pers.

Buckeye Lake, Fairfield Co., O. June 13, 1903.

Coll. W. A. Kellerman.

"Cercospora cana Sacc. (sp. nov.)"

Selva (Trevico) in foliorum pagina inferiori Erigerontis canadensis, Augusto. 1875.

"Obs. ob hyphas hyalinas ad Ramulariam vergit, sed conidia cylindracea obclavata, 60-90 x 4-5, 3-4 septata, porosus Cercosporae." P. A. Saccardo, Michelia, 2:362. 1881.

143. Gloeosporium nervisequum (Fuck.) Sacc.

On Platanus occidentalis L.

Sandusky, Erie Co., O. July 28, 1903.

Coll. W. A. Kellerman.

"Fusarium nervisequum.

a. Platani.—F. rh. 427.—Hymenula Platani Lév. in Desm. Exs. 1349. Tuberculis liberis, adnatis, rotundatis, ovatis oblongisve, planis, rugulosis, in macula exarida seriatim dispositis, fuscis, demum aterrimis, longitudinaliter dehiscentibus; conidiis oblongo-ovatis, hyalinis, 12 Mik. long., 4 Mik. crass. Tab. I. Fig. 37. conid.

"An den lebenden Blättern, die Blattrippen verfolgend, von Platanus orient., oft sehr häufig und das frühe Abfallen der Blätter bewirkend, im Sommer." L. Fuckel, Symbolae Mycologicae, 369. 1869.

144. Melampsora populina (Jacq.) Lev.

On Populus grandidentata Mx.

Bowling Green, Wood Co., O. Sept. 17, 1902.

Coll. W. A. Kellerman.

Supplement to No. 45.

145. Melampsora populina (Jacq.) Lev.

On Populus tremuloides Mx.

Bowling Green, Wood Co., O. Sept. 17, 1902.

Coll. W. A. Kellerman.

Supplement to No. 45.

146. Phyllosticta labruscae Thuem.

On Vitis vulpina L.

Sandusky, Erie Co., O. July 20, 1903.

Coll. W. A. Kellerman.

"Phyllosticta Labruscae Thüm. nov. spec.

"Ph. peritheciis mediis, dense gregariis, numerosis, sine ordine dispositis, epiphyllis, hemisphaericis, prominentibus, atris in macula suborbiculari, distincte limitata, lineam brunneam cincta, exarida, rufofusca, epiphylla, in pagina inferiore maculam pallidam fuscescentem, indistinctam formans; sporis numerosis, oblongis, regularibus, utrinque rotundatis, diaphanis, episporio tenui, achrois, intus grumulosis, 9-11 mm. long., 6-7 mm. crass." Felix von Thümen, Die Pilze des Weinstockes, 189. 1878.

147. Plasmopara australis (Speg.) Humph.

On Sicyos angulatus L.

Sandusky, Erie Co., O. July 27, 1903.

Coll. W. A. Kellerman.

"Peronospora australis Speg. (n. sp.)

"*Diag.* Hypophylla; maculae amphigenae, magnitudine ludentes primo parvulae, dein saepe totum folium occupantes, pallescentes v. fusco-pellucidescentes, angulosae; hyphae mycelii crassae, subtorulosae; haustoria subsphaeroidea, v. subclavata, numerosa, saepe totam cellulam plantae hospitalis implectentia; hyphae fertiles hinc inde erumpentes v. e stomatibus exsurgentes, rectae, cylindraceae, longiusculae, (250-500 x 14-15), hinc inde glomerulatae, usque ad verticem continuae, inferne saepe incrassatulae, sed mox brevitur ac abrupte coarctato-attenuatae, apice subverticillatim 5-12 ramosae; rami 3-6 ies tricothomi, gradatim attenuati, ac abbreviati; ramuli ultimi apice incrassatuli 3-5 sterigmata (3,5 x 1,5-2) hyalina, subampulliformia, inter se angulo recto divergentia, saepe 2-8- denticulato-lobata gerentia; conidia obovato-sphaeroidea, sursum obtuse rotundata, inferne rotundato acutata, saepeque apiculata (15 x 10-12), hyalina.

"*Hab.* Ad. folia viva *Cyclantherae hystricis* in dumetis uliginosis prope la Recoleta, Aut. 1881." Auctore Carolo Spegazzini. Fungi Argentini additis nonnulis. Brasiliensibus Montevideensibusque. Pugillus Quartus, p. 36, in Anales Sociedad scientifica argentina, Buenos Aires, 12:81. 1881.

148. Puccinia caricina DC.

On Carex comosa Boott.

Columbus, Ohio. Oct. 8, 1903.

Coll. W. A. Kellerman.

Supplement to No. 28.

149. Puccinia caricina DC.

On Carex squarrosa L.

Columbus, Ohio. Oct. 27, 1902.

Çoll. W. A. Kellerman.

Supplement to No. 28.

150. Puccinia caricis-asteris Arth.

Aecidium.

On Aster paniculatus Lam.

Columbus, Ohio. May 24, 1903.

Coll. W. A. Kellerman.

"AECIDIUM *Asterum* Sz.

"A. effusum confluens tenuissimum pallide purpurascens, peridiis aggregatis immersis, pulvere albo.

"Passim in foliis et caulibus Asterum glabrifoliorum.—Sporidia majuscula vesiculosa, globosa aut oblonga simplicia." L. D. de Schweinitz, Synopsis Fungorum Carolinae Superioris (excerpta), p. 41. No. 444. 1882. (Schrift. d. Nat. Gesselschaft zu Leipzig.)

"PUCCINIA CARICIS-ASTERIS sp. nov.

"O. Spermogonia epiphyllous, yellow, punctiform, sunken in tissue of the leaf.

"I. Aecidia hypophyllous, collected in groups on slightly swollen yellow or purplish spots, low, margin much divided and recurved; aecidiospores subglobose, 12-17 μ in diameter, wall thin, minutely roughened.

"II. Uredosori hypophyllous, oblong; uredospores oblong or obovate, 12-16 by 18-22 μ; wall thin, echinulate; pores few, scattered.

"III. Teleutosori hypophyllous, oblong to oblong-linear, prominent, soon naked, dark brown, ruptured epidermis noticeable; teleutospores oblong or clavate-oblong, 16-22 by 48-56 μ.; apex rounded, greatly thickened; pedicel slender, colored, half the length of the spore." J. C. Arthur, Journal of Mycology, 8:54. June 1902.

151. Puccinia caricis-asteris Arth.

Aecidium.

On Aster tradescanti L.

Buckeye Lake, Fairfield Co., O. June 13, 1903.

Coll. W. A. Kellerman.

Supplement to No. 150.

152. Puccinia glechomatis DC.

On Agastache nepetoides (L.) Kuntze. (Lophanthus nepetoides Benth.)

Sandusky, Erie Co., O. Aug. 1, 1903.

Coll. O. E. Jennings.

"Aecidium verrucosum.

"A. cespitosum difforme subconfluens purpureum; peridiis fusco-flavescentibus maculae purpureae insidentibus; pulvere badio conglomerato indurato." Auctore Carolo Friederico Schultz, Prodromus Florae Stargardiensis, 452. 1806.

"UREDO, puccinie du lierre terrestre. *Puccinia glechomatis. Decand.*

"Puccinia caespitulis rufis hypophyllis, saepius annulatim dispositis stipite albo, filiformi capsula tereti, obtusa; isthmo bi seu triloculari. Decand. MSS. no. 8.

"Puccinia (affinis), conferta, orbiculari modo disposita, non disrumpens; sporangiis obtusis, cylindrico-ovatis, variis, glabris dissepimento uno duobus; filamentis longissimis. Hedw. f. Fung. inedit. tab. 9.

"Elle couvre de taches, d'un jaune-rousseâtre, la surface inférieure des feuilles du lierre terrestre. Ces taches sont orbiculaires ou disposées en anneaux assez rapprochés, qui soulèvent l'épiderme sans le déchirer. Les pédicelles sont filiformes, de couleur blanche; ils se terminent par des capsules glabres, un peu variées dans leurs formes, cylindriques, quelquefois presqu' ovales, obtuses à leur sommet, divisées en deux ou trois loges par autant d'etranglemens transversaux." Encyclopédie Méthodique, Botanique, 245. 1808.

153. Puccinia helianthi Schw.

On Helianthus hirsutus Raf.

Sandusky, Erie Co., O. Aug. 5, 1903.

Coll. W. A. Kellerman.

Supplement to No. 10.

154. Puccinia violae (Schum.) DC.

Aecidium.

On Viola scabriuscula (T. & G.) Schw.

Columbus, Ohio. May 4, 1903.

Coll. O. E. Jennings and J. G. Sanders.

Supplement to No. 132.

155. Puccinia violae (Schum.) DC.

On Viola striata Ait.

Columbus, Ohio. Oct. 7, 1903.

Coll. O. E. Jennings.

Supplement to No. 96.

156. Septoria erigerontis Peck.

On Erigeron ramosus (Walt.) B. S. P.

Columbus, Ohio. May 19, 1903.

Coll. W. A. Kellerman.

Supplement to No. 136.

157. Septoria rhoina B. & C.

On Rhus radicans L.

Sandusky, Erie Co., O. Aug. 17, 1903.

Coll. W. A. Kellerman.

"Septoria rhoidis B. & C.—Maculis parvis albis, margine lato nigro cinctis; perithecio centrali, sporis vermiformibus.

"On leaves of *Rhus*. New England, Sprague. No. 5769.

"Spots minute, white, with a broad black border; perithecium solitary; spores long, tolerably thick, .003 long, slightly flexuous. It is not the same species with *Septoria Rhois*, Lév." M. J. Berkeley, Grevillea, 3:8. Sept. 1874.

158. Stichopsora solidaginis (Schw.) Diet.

On Solidago ulmifolia Muhl.

Columbus, Ohio. Oct. 8, 1903.

Coll. W. A. Kellerman.

Supplement to No. 85.

NOTE — The nomenclature here followed is that given by Dietel, Beiblatt zur Hedwigia, 42(181), 4 July 1903. The name for this species on label No. 85 is Coleosporium solidaginis (Schw.) Thüm.

159. Stichopsora vernoniae (B. et C.) Diet.

On Vernonia fasciculata Mx.

Marietta, Ohio. Sept. 20, 1903.

Coll. W. A. Kellerman.

Supplement to No. 86.

NOTE — The nomenclature is here given as published by Dietel in Beiblatt zur Hedwigia, 42(179), 4 July 1903. The name on label No. 86 is Coleosporium vernoniae B. & C.

160. Uromyces euphorbiae Cke. & Peck.

On Euphorbia nutans Lag.

Columbus, Ohio. Oct. 8, 1903.

Coll. W. A. Kellerman.

Supplement to No. 36.

INDEX TO NORTH AMERICAN MYCOLOGY.

Alphabetical List of Articles, Authors, Subjects, New Species and Hosts, New Names and Synonyms.

(Continued from page 155.)

W. A. Kellerman.

ACER, wood and bark, host to Sirothecium nigrum Morgan n. sp., Jour. Mycol. 9:83. May 1903.

ACRASIEAE, Dictyostilieae or, *see Dictyostilieae or* . . .

AECIDIUM aikeni Syd. n. sp., in foliis vivis Thalictri purpurascentis. Ann. Mycolog. 1:334. July 1903.

AECIDIUM claytoniatum Schw., *see Caeoma (Aecidium) claytoniatum* . . . .

AECIDIUM clibadii Syd. n. sp., in foliis vivis Clibadii donnell-smithii. Ann. Mycolog. 1:333. July 1903.

AECIDIUM hibisciatum, The Alternate Form. [Puccinia muhlenbergiae Arth.; inoculation experiments.] W. A. Kellerman. Jour. Mycol. 9:109-110. May 1903.

AECIDIUM hibisciatum Schw., *syn. of Puccinia hibisciata q. v.* .

AECIDIUM osmorrhizæ Peck, *syn. of Puccinia osmorrhizae q. v.*

AECIDIUM purpusiorum P. Henn. n. sp., an Früchten von Crataegus. Beiblatt zur Hedwigia, 42:(189). 4 Juli 1903.

AESCULUS octrandra, host to Cercospora aesculina Ell. & Kellerm. n. sp. Jour. Mycol. 9:105. May 1903.

AGAVE sp., host to Hypocrea agaves Maublanc n. sp. Bull. Soc. Mycolog. de France, 19:292. 1903.

ANTIRRHINUM vagans, host to Puccinia antirrhini Diet. & Holw. Jour. Mycol. 9:81. May 1903.

APPLE, host to Hypochnus sp. undescribed (H. J. Eustace). N. Y. Agr. Exp. Sta. Bull. 235:123-131. Pl. I-IV. July 1903.

APPLE rot, *see Decays, Two, of Stored Apples.* . .

ARISTOLOCHIA macrophylla, host to Cercospora guttulata Ell. & Kellerm. Jour. Mycol. 9:105. May 1903.

ARRACACIA hartwegi S. Wats., *see Velaea hartwegi* . . .

ASCOCHYTA coronaria Ell. & Davis n. sp., on living leaves of Pyrus coronaria. Trans. Wisc Acad. Sci. Arts & Let. 14:94 1903.

ASCOCHYTA lophanthi Davis n. sp., on Lophanthus scrophulariæfolius Benth. Trans. Wisc. Acad. Sci. Arts & Let. 14:95. 1903.

ASCOCHYTA rufomaculans (Berk.), *syn .of Glomerella rufomaculans q. v.*

ASPARAGUS Rust, *see Rust, Asparagus* . . .

BACTERIA and the Nitrogen Problem. George T. Moore. Year book U. S. Dept. Agr. 1902:333-342. Pl. XXXVIII-XLII. 1903.

BACTERIA of the Soil. N. S. Mayo and A. T. Kinsley. Kansas Exp. Sta. Bull. 117:167-184. May 1903.

BACTERIOLOGY for High Schools. II. (Methods and directions; illustrations.) W. D. Frost and E. G. Hastings. Jour. Appl. Micr. & Lab. Meth. 6:2270-3. April 1903.

BACTERIOLOGY for High Schools. III. (Microscopical examination.) W. D. Frost and E. G. Hastings. Jour. Appl. Micr. & Lab. Meth. 6:2383-5. June 1903.

BACTERIOLOGY for High Schools. IV. (Microscopical examination of Bacteria, continued.) W. D. Frost and E. G. Hastings. Jour. Appl. Micr. & Lab. Meth. 6:2426-8. July 1903.

BANK, damp among moss, matrix to Scutiger whiteae Murrill n. sp. Bull. Torr. Bot. Club, 30:432. Aug. 1903.

BITTER Rot of Apples. Hermann von Schrenk and Perley Spaulding. U. S. Dept. Agr. Bureau Pl. Industry, Bull. 44: 1-54. Pl. I-VIII. 18 July 1903.

BITTER-ROT fungus, *see Fungus, the Bitter-rot.* . .

BLASDALE, W. C. On a Rust of the Cultivated Snapdragon. (Puccinia antirrhini.) Jour. Mycol. 9:81-2. May 1903.

BOGUE, E. E. Collecting and Preserving Lichens. Jour. Appl. Micr. & Lab. Meth. 6:2373-4. June 1903.

BOLETUS betulinus Bull., *syn. of Piptoporus suberosus q. v.* . .

BOLETUS fasciatus Sw., *syn. of Elfvingia fasciata q. v.* . . .

BOLETUS fomentarius L., *syn. of Elfvingia fomentaria q. v.* . .

BOLETUS laricis Jacq., *syn. of Fomes laricis q. v.* . . .

BOLETUS suberosus L., *syn. of Piptoporus suberosus q. v.* . .

BOLETUS ungulatus Bull., *syn. of Elfvingia fomentaria q. v.* . .

BOTRYOSPORIUM longibrachiatum (Oud.) R. Maire [Botrytis longibrachiata Oud., B. (Polyactis) doryphora Pound et Clements, Botryosporium pulchellum R. Maire, Cephalosporium dendroides Ell. & Kell., nec Botryosporium pyramidale Cost., — sec. R. Maire.] Ann. Mycolog. 1:341. July 1903.

BOTRYOSPORIUM pyramidale Cost. (B. leucostachys Zopf.) not a synonym of Botryosporium pulchellum [Sec. R. Maire]. Ann. Mycolog. 1:341. July 1903.

BOTRYOSPORIUM pyramidale Costantin, *syn. of Botryosporium pulchrum* Corda. Jour. Mycol. 9:107. May 1903.

BOTRYOSPORIUM pulchellum R. Maire, *syn. of Botryosporium longibrachiatum q. v.*

BOTRYOSPORIUM pulchellum R. Maire, *syn. of Botryosporium pulchrum* Corda. Jour. Mycol. 9:107. May 1903.

BOTRYTIS longibrachiata Oud., *syn. of Botryosporium longibrachiatum q. v.*

BOTRYTIS longibrachiata Oudemans, *syn. of Botryosporium pulchrum* Corda. Jour. Mycol. 9:107. May 1903.

BOTRYTIS (Polyactis) doryphora Pound et Clements, *syn. of Botryosporium longibrachiatum q. v.*

BOTRYTIS (Polyactis) doryphora Pound & Clements, *syn. of Botryosporium pulchrum* Corda. Jour. Mycol. 9:107. May 1903.

BROMUS ciliatus L., host to Septoria brevispora Ell. & Davis n. sp. Trans. Wisc. Acad. Sci. Arts & Let. 14:99. 1903.

BULLETINS 15 & 16, Boston Mycological Club. Hollis Webster, Sec. [Coprinus in U. S., descriptions. Edwin A. Daniels.] June 1901.

BULLETINS 17 & 18, Boston Mycological Club. Hollis Webster, Sec. [Book Reviews.] December 1901.

BUTTERS, FRED K. A Minnesota Species of Tuber [T. lyoni Butters n. sp.] Bot. Gaz. 35:427-431, Figs. 1-3. June 1903.

CAEOMA (Aecidium) claytoniatum Schw., *syn. of Puccinia claytoniata q. v.*

CALAMAGROSTIS canadensis Beauv., host to Mastigosporium album clavum Ell. & Davis n. var. Trans. Wisc. Acad. Sci. Arts & Let. 14:98. 1903.

CALTHA leptosepala, host to Puccinia gemella Diet. et Holw. n. sp. Monogr. Uredin. 1:541. 15 May 1903.

CASSIA lindheimeriae, host to Ravenellia papillifera Syd. n. sp. Ann. Mycolog. 1:330. July 1903.

CEPHALOSPORIUM dendroides Ell. & Kellerm., *syn, of Botryosporium longibrachiatum q. v.*

CEPHALOSPORIUM dendroides Ell. & Kellerm., *syn. of Botryosporium pulchrum* Corda. Jour. Mycol. 9:107. May 1903.

CERCOSPORA aesculina Ell. & Kellerm. n. sp., on leaves of Aesculus octandra. Jour. Mycol. 9:105. May 1903.

CERCOSPORA, Two New Species of [C. aesculina and C. guttulata]. J. B. Ellis and W. A. Kellerman. Jour. Mycol. 9:105. May 1903.

CERCOSPORA guttulata Ell. & Kellerm. n. sp., on leaves of Aristolochia macrophylla. Jour. Mycol. 9:105. May 1903.

CLIBADIUM donnell-smithii, host to Aecidium clibadii Syd. n. sp. Ann. Mycolog. 1:333. July 1903.

CLITOCYBE trullisata Ellis. [Popular description and habitat.] Hollis Webster. Boston Mycological Club, Bulletin No. 20. [3 pp. 1 pl.] June 1903.

CLUB root, Notes upon. Byron D. Halsted and James A. Kelsey. An. Rep. N. J. State Agr. Exp. Sta. 23:398-9. 31 Oct. 1902.

COLEOSPORIUM elephantopi (Schw.) Thüm., *syn. of Stichopsora elephantopodis q. v.*

COLEOSPORIUM solidaginis (Schw.) Thüm., *syn. of Stichopsora solidaginis q. v.*

COLEOSPORIUM vernoniae B. et C., *syn. of Stichopsora vernoniae q. v.*

COLLETOTRICHUM cinctum B. & C., *syn. of Glomerella cincta q. v.*

COLLETOTRICHUM rubicolum E. & E., *syn. of Glomerella rubicolor q. v.*

CONANT, JENNIE F. A list of species of Fungi exhibited at Horticultural Hall, Boston, 1902. Boston Mycological Club, Bulletin No. 19 (4 pp.). 5 Feb. 1903.

CONTRIBUTIONS to the Biology of RHIZOBIA, *see Rhizobia.* . .

COPRINUS species in the United States. [Descriptions. Edwin A. Daniels.] Boston Mycological Club. Bulletins 15 & 16 (8 pp.). June 1901.

CRATAEGUS, fruit, host to Aecidium purpusiorum P. Henn. n. sp. Beiblatt zur Hedwigia, 42:(189). 4 Juli 1903.

CRYPTOPORUS, *see Polyporaceae of North America.—V. The Genera.* . . . .

CYPHELLA Fr., *syn. of Porodiscus q. v.*

DANIELS, EDWIN A. Coprinus [of the United States. Descriptions]. Boston Mycological Club, Bull. 15 and 16. June 1901.

DAVIS, BRADLEY MOORE. Oogenesis in Saprolegnia. Bot. Gaz. 35:233-249, 320-349. Pl. IX-X. April & May 1903.

DECAYS, Two, of Stored Apples. Another Apple Rot following Scab. [Hypochnus sp.?] H. J. Eustace. N. Y. Agr. Exp. Sta. Bull. 235:123-131. July 1903.

DELACROIX, G. De la tavelure des Goyaves produite par le Gloeosporium psidii nov. sp. G. Del. Bull. Soc. Myc. France, 19: 143-5. 30 April 1903.

DICTYOSTILIEAE or Acrasieae. [A critical Review.] A. P. Morgan. Jour. Mycol. 9:84-6. May 1903.

DISEASE, Cacao [Exoascus theobroma, — in Trinidad]. J. H. Hart. Trinidad Bot. Dept. Bull. 38:551. April 1903.

DISEASES of Broom Corn; Smut, Sphacelotheca sorghi and Insect Enemies. Charles P. Hartley. U. S. Dept. Agr. Farmers' Bulletin, 174:26-8. 1903.

DISEASE, Corn Moulds and, *see Moulds, Corn and.* . . .

DISEASES, Fungous, *see Fungous Diseases.* . . . . .

DISEASES, Fungous, and Spraying, *see Fungous.* . . . . .

DISEASES Injurious to Forage Crops. [Ustilago hypodites, scolochloa, bromivora, striaeformis, and Tilletia fusca.] David Griffiths. U. S. Dept. Agr. Bureau Pl. Industry, Bull. 38: 43-4. 3 July 1903.

DISEASES, Plant, in the United States in 1902. W. A. Orton. Yearbook U. S. Dept. Agr. 1902:714-9. 1903.

DISEASES of the Potato in Relation to its Development. L. R. Jones. Trans. Mass. Hort. Soc. 1903:144-154. 1903.

DISEASE, Rosette, of Potatoes, attributed to the sterile fungus Rhizoctonia. A. D. Selby. Ohio Agr. Exp. Sta. Bull. 139: 53-64. f. 1-5. April 1903.

DOASSANSIA sagittariæ confluens Davis n. forma, on Sagittaria heterophylla Ph. Trans. Wisc. Acad. Sci. Arts and Let. 14:92. 1903.

DURAND, Elias J. The Genus Sarcosoma in North America. [Key and descriptions, including two new species.] Jour. Mycol. 9:102-4. May 1903.

EARLE, F. S. A Key to the North American Species of Panus. Torreya, 3:86-7. June 1903.

EARLE, F. S. A Key to the North American Species of Pluteolus. Torreya, 3:124-5. August 1903.

ELFVINGIA fasciata (Schw.) Murrill n. n. [Boletus fasciatus Sw., Polyporus fasciatus Fr., Polyporus sclerodermus Lev., Polyporus marmoratus B. & C., Fomes fasciatus Cooke.] Bull. Torr. Bot. Club, 30:299. May 1903.

ELFVINGIA fomentaria (L.) Murrill n. n. [Boletus fomentarius L., Boletus ungulatus Bull., Polyporus fomentarius Fr., Fomes fomentarius Gill.] Bull. Torr. Bot. Club, 30:298. May 1903.

ELFVINGIA, The Genus (Polyporaceae of North America). William Alphonso Murrill. Bull. Torr. Bot. Club, 30:296-301. May 1903.

ELFVINGIA, Key to the North American species [Murrill]. Bull. Torr. Bot. Club, 30:297. May 1903.

ELFVINGIA lionetii (Rolland) Murrill n. n. [Ganoderma lionetii Rolland.] Bull. Torr. Bot. Club, 30:301. May 1903,

ELFVINGIA megaloma (Lev.) Murrill n. n. [Polyporus megaloma Lév., Polyporus leucophaeus Mont., Fomes megaloma Cooke, Ganoderma leucophaeum Pat] Bull. Torr. Bot. Club, 30:300. May 1903.

ELFVINGIA reniformis (Morg.) Murrill n. n. [Polyporus reniformis Morg., Fomes reniformis Sacc.] Bull. Torr. Bot. Club, 30:299. May 1903.

ELFVINGIA tornata (Pers.) Murrill n. n. [Polyporus tornatus Pers., P. australis Fr., Fomes australis Cooke, Ganoderma australe Pat., Scindalma tornatum Kuntze.] Bull. Torr. Bot. Club, 30:301. May 1903.

ELLIS, J. B. and Kellerman, W. A. Two New Species of Cercospora [C. aesculina and C. guttulata]. Jour. Mycol. 9:105. May 1903.

ENSLINIA pocula Fr., *syn. of Porodiscus pendula q. v.*

EUPHORBIA calyculata, host to Puccinia euphorbia intumescens Syd, n. var. Monogr. Uredin. 1:457. 15 May 1903.

EUSTACE, H. J. Two Decays of Stored Apples. Another Apple Rot following Scab. [Hypochnus sp. ?] N. Y. Agr. Exp. Sta. Bull. 235:123-131. Pl. I-IV. July 1903.

EXOASCUS theobroma [in Trinidad]. J. H. Hart. Trin. Bot. Dept. Bull. 38:551. April 1903.

FINK, Bruce. Contributions to a Knowledge of the Lichens of Minnesota. — VII. Lichens of the Northern Boundary. Minn. Bot. Studies, 3:167-236. 3 July 1903.

FINK, Bruce. Some common Types of Lichen Formations. Bull. Torr. Bot. Club, 30:412-8. July 1903.

FOMES australis Cooke, *syn. of Elfvingia tornata q. v.*

FOMES fasciatus Cooke, *syn. of Elfvingia fasciata q. v.*

FOMES fomentarius Gill., *syn. of Elfvingia fomentaria q. v.* . .

FOMES, The Genus. Polyporaceae of North America. — III. William Alphonso Murrill. Bull. Torr. Bot. Club, 30:225-232. April 1903.

FOMES, Key to the North American Species [Murrill]. Bull. Torr. Bot. Club, 30:225-6. April 1903.

FOMES laricis (Jacq.) Murrill n. n. [Boletus laricis Jacq.] Bull. Torr. Bot. Club, 30:230. April 1903.

FOMES megaloma Cooke, *syn. of Elfvingia megaloma q. v.* . .

FOMES meliae (Underw.) Murrill n. n. [Polyporus meliae Underw.] Bull. Torr. Bot. Club, 30:232. April 1903.

FOMES ohioensis (Berk.) Murrill n. n. [Trametes ohioensis Berk.] Bull. Torr. Bot. Club, 30:230. April 1903.

FOMES reniformis Sacc., *syn. of Elfvingia reniformis q. v.* . .

FOMES rubritinctus Murrill n. sp. Bull. Torr. Bot. Club, 30:232. April 1903.

FOMES stipitatus Murrill n. sp. Bull. Torr. Bot. Club, 30:229. April 1903.

FOMES volvatus, synonym of Cryptoporus volvatus (Peck) Shear. Bull. Torr. Bot. Club, 30:424. Aug. 1903.

FRANSERA ambrosioides, host to Puccinia franserae Syd. n. sp. Ann. Mycolog. 1:326. July 1903.

FRAXINUS sambucifolia Lam., host to Marsonia fraxini Ell. & Davis n. sp. Trans. Wisc. Acad. Sci. Arts & Let. 14:97. 1903.

FROST, W. D. & Hastings, E. G. Bacteriology for High Schools. II. [Methods and directions; illustrations.] Jour. Appl. Micr. & Lab. Meth. 6:2270-3. April 1903.

FROST, W. D. & Hastings, E. G. Bacteriology for High Schools. III. [Microscopical examination.] Jour. Appl. Micr. & Lab. Meth. 6:2383-5. June 1903.

FROST, W. D. & Hastings, E. G. Bacteriology for High Schools. IV. [Microscopical examination of Bacteria, continued.] Jour. Appl. Micr. & Lab. Meth. 6:2426-8. July 1903.

FUNGI, A few of the common edible, occurring in the State. Michigan Mushrooms. [General description and illustrations.] B. O. Longyear. Mich. Agr. Exp. Sta. Bull. 208: 79-100. April 1903.

FUNGI, fleshy, a few common of Ames. [Descriptive notes.] Alice W. Hess. Iowa Agr. Exp. Sta. Bull. 61:148-153. 1901.

FUNGI, Fleshy, Some Suggestions for the Beginner in Collecting and Studying. B. O. Longyear. Jour. Appl. Micr. & Lab. Meth. 6:2369-73. June 1903.

FUNGI, the Higher, and Lichens. Laboratory Outlines for the Elementary Study of Plant Structures and Functions from the Standpoint of Evolution. John H. Schaffner. Jour. Appl. Micr. & Lab. Meth. 6:2275-7, 2330-2, 2387-8. April, May and June, 1903.

FUNGI [List of Species exhibited at Horticultural Hall, Boston, 1902.] Jennie F. Conant. Boston Mycological Club, Bulletin No. 19 (4 pp.). 5 Feb. 1903.

FUNGI on old Logs and Stumps. C. L. Shear. Plant World, 6: 139. Pl. 20. June 1903.

FUNGI, The Relations of Insects to. Perley Spaulding. Plant World, 6:182-4. August 1903.

FUNGI as related to Weather. Halsted, Byron D. and Kelsey, James A. [Notes from State Weather and Crop Bulletins.] An. Rep. N. J. State Agr. Exp. Sta. 1902. 23:417-8. 1903.

FUNGOUS Diseases, *see Diseases, Fungous.* . . .

FUNGOUS Diseases, Notes on Some of the Insects and, Affecting Horticultural Crops. [Plowrightia morbosa, Dendrophagus globosus, Peach Yellows, and Peach and Plum Rosette.] Ala. Agr. Exp. Sta. Bull. 124:93-101. May 1903.

FUNGUS Diseases of Grasses. [Popular Descriptions and figures.] L. H. Pammel and J. B. Weems. Iowa Geological Survey Bull. 1:185-292. 1901.

FUNGOUS Diseases and Spraying. H. H. Lamson. N. H. Agr. Exp. Sta. Bull. 101:55-67. April 1903.

FUNGOUS Enemies of Plants in Nova Scotia. [List.] Halsted, Byron D. and Kelsey, James A. An. Rep. N. J. State Agr. Exp. Sta. 1902, 23:421-2. 1903.

FUNGUS, Another Much-named. [Cephalosporium dendroides Ell. & Kellerm., syn. of Botryosporium pulchrum Corda.] W. A. Kellerman. Jour. Mycol. 9:100-7. May 1903.

FUNGUS, the Bitter-rot. [Synonomy.] Hermann von Schrenk, Perley Spaulding. Science, N. S., 17:750-1. 8 May 1903.

FUNGUS Enemies [of the Apple, Pear and Quince—popular descriptions with illustrations.] F. L. Stevens. N. C. Agr. Exp. Sta. Bull. 183:64-82. April 1903.

GALL upon a Mushroom. [Omphalia campanella.] Charles Thom. Bot. Gaz. 36:223-5. Sept. 1903.

GANODERMA australe Pat., *syn. of Elfvingia tornata q. v.* . . .

GANODERMA leucophæum Pat., *syn. of Elfvingia megaloma q. v.*.

GANODERMA lionetii Rolland, *syn. of Elfvingia lionetii q. v.* . .

GARRETT, A. O. A Provisional List of the Uredineæ of Bourbon County, Kansas. Trans. Kans. Acad. Sci. 18:147-150. 1903.

GLŒOSPORIUM cingulatum Atk., *syn. of Glomerella cingulata q. v.*

GLOEOSPORIUM fructigenum (Berk.), *syn. of Glomerella rufomaculans q. v.* . . .

GLOEOSPORIUM laeticolor (Berk.), *syn. of Glomerella rufomaculans, q. v.*

GLOEOSPORIUM piperatum E. & E., *syn. of Glomerella piperata q. v.*

GLOEOSPORIUM psidii G. Del., nov. sp. in epicarpio Psidii pomiferi, Mexico. Bul. Soc. Myc. France, 19:145. 30 April 1903.

GLOEOSPORIUM psidii nov. sp. G. Del., De la tavelure des Goyaves produite par le. G. Delacroix. Bull. Soc. Myc. France, 19: 143-5. 30 April 1903.

GLOEOSPORIUM rufomaculans (Berk.) von Thüm., *syn. of Glomerella rufomaculans q. v.* . . .

GLOEOSPORIUM versicolor (Berk. & Curt.), *syn. of Glomerella rufomaculans q. v.* . . .

GLOMERELLA von Schrenk & Spaulding n. n. [Gnomoniopsis Stoneman.] Science, N. S. 17:750-1. 8 May 1903.

GLOMERELLA cincta (B. et C.) Spaulding and von Schrenk n. n. [Colletotrichum cinctum B. & C.] U. S. Dept. Agr. Bureau Pl. Industry, Bull. 44:29. 18 July 1903.

GLOMERELLA cinctum (B. & C.) Spaulding and v. Schrenk n. n. [Colletotrichum cinctum B. & C.] Science, N. S. 17:751-8 May 1903.

GLOMERELLA cingulata (Atk.) Spaulding and von Schrenk n. n. [Gloeosporium cingulatum Atk.]. Science N. S. 17:751. 8 May 1903. U. S. Dept. Agr. Bureau Pl. Industry, Bull. 44:29. 18 July 1903.

GLOMERELLA piperata (E. & E.) Spaulding and von Schrenk n. n. [Gloeosporium piperatum E. & E.] Science N. S. 17:751. 8 May 1903. U. S. Dept. Agr. Bureau Pl. Industry, Bull. 44:29. 18 July 1903.

GLOMERELLA rubicolor (E. & E.) Spaulding and von Schrenk n. n. [Colletotrichum rubicolum E. & E.] Science, N. S. 17: 751. 8 May 1903. U. S. Dept. Agr. Bureau Pl. Industry, Bull. 44:29. 18 July 1903.

GLOMERELLA rubicolum (E. & E.) Spaulding & von Schrenk n. n. [Gnomoniopsis rubicolum E. & E.] Science, N. S. 17:751. 8 May 1903.

GLOMERELLA rufomaculans (Berk.) Spaulding and von Schrenk n. n. [Septoria rufomaculans (Berk.) 1854; Ascochyta rufomaculans (Berk.) 1860; Gloesoporium rufomaculans (Berk.) von Thüm. 1879; Gl. fructigenum (Berk.) 1856; Gl. læticolor (Berk.) 1859; Gl. versicolor (Berk. & Curt.) 1874; Gnomoniopsis fructigena (Berk.) Clinton, 1892.] Science, N. S. 17:751. 8 May, 1903.

GNOMONIOPSIS Stoneman, *syn. of Glomerella q. v.* . . .

GNOMONIOPSIS fructigena (Berk.) Clinton, *syn. of Glomerella rufomaculans q. v.* . . .

GRIFFITHS, David. Diseases Injurious to Forage Crops. [Ustilago hypodites, scolochloa, bromivora, striæformis, and Tilletia fusca.] U. S. Dept. Agr. Bureau Pl. Industry, Bull. 38:43-4. 3 July 1903.

HALSTED, Byron D. and Kelsey, James A. The Asparagus Rust. [Notes on distribution.] An. Rep. N. J. State Agr. Exp. Sta. 1902, 23:403-8. 1903.

HALSTED, Byron D. and Kelsey, James A. Fungous Enemies of Plants in Nova Scotia. [List.] An. Rep. N. J. State Agr. Exp. Sta. 1902, 23:421-2. 1903.

HALSTED, Byron D. and Kelsey, James A. Fungi as related to Weather. [Notes from State Weather and Crop Bulletins.] An. Rep. N. J. State Agr. Exp. Sta. 1902, 23:417-8. 1903.

HALSTED, Byron D. and Kelsey, James A. Mildew of Lima Beans. [Notes; Phytophthora phaseoli Thax.] An. Rep. N. J. Agr. Exp. Sta. 1902, 399-403. 1903.

HALSTED, Byron D. and Kelsey, James A. Notes upon Club root. An. Rep. N. J. State Agr. Exp. Sta. 23:398-9. 31 Oct. 1902.

HALSTED, Byron D. and Kelsey, James A. Notes upon some Rusts and Mildews at Wernersville, Pa. An. Rep. N. J. State Agr. Exp. Sta. 1902, 23:419-420. 1903.

HARRIS, Carolyn W. Lichens — Nephroma — Solorina. [Popular descriptions and figures.] Bryologist, 6:76-9. Sept. 1903.

HARRIS, Carolyn W. Lichens—Sticta. [Popular descriptions and figures.] Bryologist, 6:55-7. Pl. IX. July 1903.

HART, J. H. Cacao Disease (Witches' Broom) [in Trinidad]. Trinidad Bot. Dept. Bull. 38:551. April 1903.

HARTLEY, Charles P. Diseases [of Broom Corn; Smut, Sphacelotheca sorghi] and Insect enemies. U. S. Dept. Agr. Farmers' Bulletin, 174:26-8. 1903.

HENDERSON, L. F. Mushrooms or Toadstools: A Natural Food Product. Idaho Agr. Exp. Sta. Bull. 27:27-64. March 1901.

HESS, Alice W. A few common fleshy Fungi of Ames. [Descriptive notes.] Iowa Agr. Exp. Sta. Bull. 61:148-153. 1901.

HIERACIUM albiflorum, host to Puccinia sejuncta Syd. n. sp. Ann. Mycolog. 1:327. July 1903.

HYPOCHNUS sp. undescribed (?), an apple rot following scab. [H. J. Eustace.] N. Y. Agr. Exp. Sta. Bull. 235:123-131. Pl. I-IV. July 1903.

HYPOCREA agaves Maublanc n. sp., in foliis Agave sp. Bull. Soc. Mycolog. de France, 19:292. 1903.

INDEX to North American Mycology, continued. W. A. Kellerman. Jour. Mycol. 9:116-155. May 1903.

IVESIA unguiculata, host to Phragmidium ivesiæ Syd. n. sp. Ann. Mycolog. 1:329. July 1903.

JONES, L. R. Diseases of the Potato in Relation to its Development. Trans. Mass Hort. Soc. 1903:144-154. 1903.

KELLERMAN, W. A. The Alternate Form of Aecidium hibisciatum. [Puccinia muhlenbergiæ Arth.: inoculation experiments.] Jour. Mycol. 9:109-110. May 1903.

KELLERMAN, W. A. Another Much-named Fungus. [Cephalosporium dendroides Ell. & Kellerm., syn. of Botryosporium pulchrum Corda.] Jour. Mycol. 9:106-7. May 1903.

KELLERMAN, W. A. Index to North American Mycology, continued. Jour. Mycol. 9:116-155. May 1903.

KELLERMAN, W. A. Notes from Mycological Literature. V. Jour. Mycol. 9:155-9. May 1903.

KELLERMAN, W. A. Ohio Fungi, Fascicle VII. [Labels with the original descriptions, 20 species.] Jour. Mycol. 9:110-6. May 1903.

KELLERMAN, W. A. Puccinia lateripes B. & Rav. an Aut-eupuccinia. [Inoculation experiments.] Jour. Mycol. 9:107-9. Pl. II. May 1903.

KELSEY, James A and Halsted, Byron D., *see Halsted.* . . .

KEY to the N. A. species of Elfvingia, *see Elfvingia, Key.* . .

KEY to the N. A. Species of Fomes, *see Fomes, Key.* . . .

KEY to the N. A. Species of Panus, *see Panus, Key.* . . .

KEY to the N. A. species of Pluteolus, *see Pluteolus, Key.* . .

KEY to the North American species of Sarcosoma, *see Sarcosoma, Key.* . . .

KEY to the North American species of Scutiger, *see Scutiger, Key.* . . .

KINSLEY, A. T. and Mayo, N. S., *see Mayo, N. S., and* . . .

LAMSON, H. H. Fungous Diseases and Spraying. N. H. Agr. Exp. Sta. Bull. 101:55-67. April 1903.

LEAVES of Chestnut and Rhododendron, host to Sarcosoma cyttarioides Rehm n. sp. Jour. Mycol. 9:104. May 1903.

LICHEN Formations, some common Types. Bruce Fink. Bull. Torr. Bot. Club, 30:412-8. July 1903.

LICHEN Formations, *see Lichens of Minnesota, Contribution VII.* . . .

LICHENS, Collecting and Preserving. E. E. Bogue. Jour. Appl. Micr. & Lab. Meth. 6: 2373-4. June 1903.

LICHENS, The Higher Fungi and, Laboratory Outlines, *see Fungi, higher.*

LICHENS of Minnesota, Contributions to a Knowledge of.—VII. Lichens of the Northern Boundary. Bruce Fink. Minn. Bot. Studies, 3:167-236. 3 July 1903.

LICHENS—Nephroma—Solorina. [Popular descriptions and figures.] Carolyn W. Harris. Bryologist, 6:76-9. Sept. 1903.

LICHENS—Sticta. [Popular descriptions and figures.] Carolyn W. Harris. Bryologist, 6:55-8. Pl. IX. July 1903.

LINARIA amethystina, host to Puccinia antirrhini Diet. & Holw. Jour. Mycol. 9:82. May 1903.

LINARIA reticulata, host to Puccinia antirrhini Diet. & Holw. Jour. Mycol. 9:82. May 1903.

LONGYEAR, B. O. Michigan Mushrooms. A few of the common edible Fungi occurring in the State. [General description and illustrations.] Mich. Agr. Exp. Sta. Bull. 208: 79-100. April 1903.

LONGYEAR, B. O. Some Suggestions for the Beginner in Collecting and Studying Fleshy Fungi. Jour. Appl. Micr. & Lab. Meth. 6:2369-73. June 1903.

LOPHANTHUS scrophulariæfolia Benth., host to Ascochyta lophanthi Davis n. sp. Trans. Wisc. Acad. Sci. Arts & Let. 14-95. 1903.

MACKINTOSH, R. S. Fungus Diseases, Notes on some of the Insects and, Affecting Horticultural Crops. [Plowrightia morbosa, Dendrophagus globosus, Peach Yellows, and Peach and Plum Rosette.] Ala. Agr. Exp. Sta. Bull. 124:93-101. May 1903.

MARSONIA fraxini Ell. & Davis n. sp., on leaves of Fraxinus sambucifolia Lam. Trans. Wisc. Acad. Sci. & Let. 14:97. 1903.

MASTIGOSPORIUM album clavum Ell. & Davis n. var., on Calamagrostis canadensis Beauv. Trans. Wisc. Acad. Sci. Arts & Let. 14:98. 1903.

MAYO, N. S. and Kinsley, A. T. Bacteria of the Soil. Kansas Exp. Sta. Bull. 117:167-184. May 1903.

METASTELMA schlechtendalii, host to Puccinia sphærospora Syd. et P. Henn. n. sp. Ann. Mycolog. 1:327. July 1903.

MICHIGAN Mushrooms, *see Mushrooms, Michigan.* . . .

MILDEW of Lima Beans. [Notes; Phytophthora phaseoli Thax.] Byron D. Halsted and James A. Kelsey. An. Rep. N. J. State Agr. Exp. Sta. 1902, 23:399-403. 1903.

MILDEWS, Rusts and, Notes upon some, *see Rusts and.* . . .

Discard Mangoose, etc. and substitute:

MONGOOSE dung, host to Cephaliophora tropica Thaxter n. sp. Bot. Gaz. 35:158. March 1903.

MOORE, George T. Bacteria and the Nitrogen Problem. Yearbook U. S. Dept. Agr. 1902:333-342. Pl. XXXVIII-XLII. 1903.

MORGAN, A. P. Dictyostilieae or Acrasieae. [A critical Review.] Jour. Mycol. 9:84-6. May 1903.

MORGAN, A. P. A New Species of Sirothecium. [S. nigrum.] Jour. Mycol. 9:82-3. May 1903.

MOULDS, Corn, and Disease. [Aspergillus glaucus.] L. H. Pammel and J. B. Weems. Iowa Geological Survey Bull. 1:182-4. 1901.

MURRILL, William Alphonso. A historical Review of the Genera of the Polyporaceae. Jour. Mycol. 9:87-102. May 1903.

MURRILL, William Alphonso. Polyporaceæ of North America.—III. The Genus Fomes. Bull. Torr. Bot. Club, 30:225-232. April 1903.

MURRILL, William Alphonso. The Polyporaceæ of North America — IV. The Genus Elfvingia. Bull. Torr. Bot. Club, 30:296-301. May 1903.

MURRILL, William Alphonso. The Polyporaceæ of North America.—V. The Genera Cryptoporus, Piptoporus, Scutiger and Porodiscus. Bull. Torr. Bot. Club, 30:423-434. Aug. 1903.

MUSHROOM, Gall upon, *see Gall upon a.* . . .

MUSHROOMS, Michigan. A few of the common edible Fungi occurring in the State. [General description and illustrations.] B. O. Longyear. Mich. Agr. Exp. Sta. Bull. 208:79-100. April 1903.

MUSHROOMS or Toadstools: A Natural Food Product. L. F. Henderson. Idaho Agr. Exp. Sta. Bull. 27:27-64. March 1901.

MUSHROOMS, *see Toadstools.* . . .

MYCOLOGICAL Club, Boston. Bulletins 15 & 16. [Coprinus of the United States, descriptions. Edwin A. Daniels.] June 1901.

MYCOLOGICAL Club, Boston. Bulletins 17 & 18. [Book Reviews.] Dec. 1901.

MYCOLOGY, Index to North American, *see Index to.* . . .

NEPHROMA, *see Lichens—Nephroma—Solorina.* . . .

NEUE Pilze, Zwei, aus Ohio, *see Zwei Neue Pilze.* . . .

NOTES from Mycological Literature. V. W. A. Kellerman. Jour. Mycol. 9:155-9. May 1903.

NOTES upon some Rusts and Mildews, *see Rusts and.* . . .

OHIO Fungi, Fascicle VII. W. A. Kellerman. [Labels with the original descriptions, 20 species.] Jour. Mycol. 9:110-6. May 1903.

ONOCLEA sensibilis, host to Uredinopsis americana Syd. n. sp. Ann. Mycolog. 1:325. July 1903.

ORTON, W. A. Plant Diseases in the United States in 1902. Yearbook U. S. Dept. Agr. 1902:714-9. 1903.

OUTLINE of the History of Leguminous root Nodules and Rhizobia, *see Rhizobia.* . . .

PAMMEL, L. H. and Weems, J. B. Bacterial Diseases (in Grasses of Iowa.) Iowa Geolog. Surv. Bull. 1:281-292. 1901.

PAMMEL, L. H. and Weems, J. B. Fungus Diseases of Grasses. [Popular Descriptions and figures.] Iowa Geolog. Surv. Bull. 1:185-281. 1901.

PAMMEL, L. H. and Weems, J. B. Corn Moulds and Disease. [Aspergillus glaucus.] Iowa Geological Survey Bull. 1: 182-4. 1901.

PANUS, Key to the North American Species [Earle]. Torreya, 3:86-7. June 1903.

PEZIZA pendula Schw., *syn. of Porodiscus pendula q. v.*

PEZIZA singularia Peck, *see Pseudopeziza singularia.*

PHRAGMIDIUM ivesiæ Syd. n. sp., in foliis vivis Ivesiæ unguiculatæ. Ann. Mycolog. 1:329. July 1903.

PHRAGMIDIUM potentillæ-canadensis Diet. n. sp., on Potentilla canadensis. Beiblatt zur Hedwigia, 42:(179). 4 July 1903.

PHYCOMYCES NITENS, formation of spores, *see Spores, Formation.* . . .

PHYCOMYCETES, four, showing various habits. Laboratory Outlines for the Elementary Study of Plant Structures and Functions from the Standpoint of Evolution. John H. Schaffner. Jour. Appl. Micr. & Lab. Meth. 6:2185-6. Feb. 1903.

PILZE, Zwei, aus Ohio, *see Zwei neue Pilze.* . . .

PIPTOPORUS, *see Polyporaceae of North America.—V. The Genera.* . . .

PIPTOPORUS betulinus Karst., *syn. of Piptoporus suberosus q. v.* . . .

PIPTOPORUS suberosus (L.) Murrill n. n. [Boletus suberosus L., B. betulinus Bull., Polyporus betulinus Fr., Piptoporus betulinus Karst.] Bull. Torr. Bot. Club, 30:425. Aug. 1903.

PLUTEOLUS, A Key to the North American Species. F. S. Earle. Torreya, 3:124-5. Aug. 1903.

POLYPORACEÆ of North America. — III. The Genus Fomes. William Alphonso Murrill. Bull. Torr. Bot. Club, 30:225-232. April 1903.

POLYPORACEÆ of North America. — IV. The Genus Elfvingia. William Alphonso Murrill. Bull. Torr. Bot. Club, 30:296-301. May 1903.

POLYPORACEÆ of North America. — V. The Genera Cryptoporus, Piptoporus, Scutiger and Porodiscus. William Alphonso Murrill. Bull. Torr. Bot. Club, 30:423-434. Aug. 1903.

POLYPORACEÆ, A historical Review of the genera of the. William Alphonso Murrill. Jour. Mycol. 9:87-102. May 1903.

POLYPORUS australis Fr., *syn, of Elfvingia tornata q. v.* . . .

POLYPORUS betulinus Fr., *syn. of Piptoporus suberosus q. v.* . .

POLYPORUS caeruleoporus Peck, *syn. of Scutiger caeruleoporus q. v.* . . .

POLYPORUS cryptoporus Ell. & Barth., *syn. of Scutiger cryptoporus q. v.* . . . . .

POLYPORUS cupulaeformis B. & C., *syn. of Porodiscus pendula q. v.* . . .

POLYPORUS decurrens Underw., *syn. of Scutiger decurrens q. v.*

POLYPORUS earlei Underw., *syn. of Scutiger griseus q. v.* . . .

POLYPORUS ellisii Berk., *syn. of Scutiger ellisii q. v.* . . .

POLYPORUS fasciatus Fr., *syn. of Elfvingia fasciata q. v,* . . .

POLYPORUS flavosquamosus Underw., *syn. of Scutiger ellisii q. v.*

POLYPORUS fomentarius Fr., *syn. of Elfvingia fomentaria q. v.*

POLYPORUS griseus Peck, *syn. of Scutiger griseus q. v.* . . .

POLYPORUS holocyaneus Atk., *syn. of Scutiger holocyaneus q. v.*

POLYPORUS kansensis Ell. & Barth., *syn of Scutiger radicatus q. v.* . . .

POLYPORUS leucophaeus Mont., *syn. of Elfvingia megaloma q. v.*

POLYPORUS marmoratus B. & C., *syn. of Elfvingia fasciata q. v.*

POLYPORUS megaloma Lév., *syn. of Elfvingia megaloma q. v.* .

POLYPORUS meliae Underw., *syn. of Fomes meliae q. v.* . . .

POLYPORUS morgani Peck, *syn. of Scutiger radicatus q. v.* . . .

POLYPORUS obvolutus Berk. & Cooke, synonym of Cryptoporus volvatus (Peck) Shear. Bull. Torr. Bot. Club, 30:424. Aug. 1903.

POLYPORUS persicinus B. & C., *syn of Scutiger persicinus q. v.*

POLYPORUS pocula B. & C., *syn of Porodiscus pendula q. v.* . .

POLYPORUS radicatus Schw., *syn. of Scutiger radicatus q. v.* . .

POLYPORUS reniformis Morg., *syn. of Elfvingia reniformis q. v.*

POLYPORUS retipes Underw., *syn. of Scutiger retipes q. v.* . . .

POLYPORUS sclerodermus Lév., *syn. of Elfvingia fasciata q. v.* .

POLYPORUS tornatus Pers., *syn. of Elfvingia tornata q. v.* . . .

POLYPORUS volvatus Peck, *syn. of Cryptoporus volvatus q. v.* .

POLYPORUS volvatus torreyi Ger., *syn. of Cryptoporus volvatus torreyi q. v.* . . .

PORODISCUS, *see Polyporaceae of North America.—V. The Genera.* . . .

PORODISCUS Murrill n. gen. [Polyporus pocula (Schw.) B. & C., the type.] Bull. Torr. Bot. Club, 30:432. Aug. 1903.

PORODISCUS pendula (Schw.) Murrill n. n. [Peziza pendula Schw., Cyphella pendula Fr., Sphaeria pocula Schw., Enslinia pocula Fr., Polyporus pocula B. & C., Polyporus cupulaeformis B. & C.] Bull. Torr. Bot. Club, 30:433. Aug. 1903.

POTENTILLA canadensis, host to Phragmidium potentillae-canadensis Diet. n. sp. Beiblatt zur Hedwigia, 42:(179). 4 July 1903.

PSEUDOPEZIZA singularia Peck *in litt.* [Peziza singularia Peck.] Trans. Wisc. Acad. Sci. Arts Let. 14:94. 1903.

PSIDIUM pomiferum, host to Gloeosporium psidii G. Del. n. sp. Bull. Soc. Myc. France. 19:145. 30 April 1903.

PUCCINIA antirrhini Diet. & Holw., occurring on Antirrhinum majus and A. vagans, also Linaria reticulata and L. amethystina. [Blasdale.] Jour. Mycol. 9:81-2. May 1903.

PUCCINIS bupleuri Berk. Grev. 1874, *syn. of Puccinia osmorrhizae q. v.*

PUCCINIA chaerophylli Transzsch. F. Ross. 217, *syn. of Puccinia osmorrhizae q. v.*

PUCCINIA claytoniata (Schw.) Syd. n .n. [Caeoma (Aecidium) claytoniatum Schw., Puccinia mariae-wilsoni Clint.] Monogr. Uredin. 1:561. 15 May 1903.

PUCCINIA congregata Hark., syn. of Puccinia heucherae (Schw.) Diet. [Sec. Syd.] Monogr. Uredin. 1:498. 15 May 1903.

PUCCINIA coulterophyta Diet. & Holw., *syn. of Puccinia prionosciadii q. v.* . . .

PUCCINIA euphorbiae intumescens Syd. n. var., in foliis vivis Euphorbiae calyculatae. Monogr. Uredin. 1:457. 15 May 1903.

PUCCINIA franserae Syd. n. sp., in foliis vivis Franserae ambrosioidis. Ann. Mycolog. 1:326. July 1903.

PUCCINIA gemella Diet. et Holw. n. sp., in foliis Calthae leptosepalae. Monogr. Uredin. 1:541. 15 May 1903.

PUCCINIA hibisciata (Schw.) Kellerman n. n. [Aecidium hibisciatum Schw., Puccinia windsoriae Burr. non Schw., Puccinia muhlenbergiae Arth.] Jour. Mycol. 9:110. May 1903.

PUCCINIA jonesii Farl. & Seym. Host Index, 203, 1888, synonym of Puccinia musenii Ell. & Ev. [Lindroth.] Acta Soc. Faun. et Fl. Fenn. 22:75. 1902.

PUCCINIA jonesii Aut. p. p., *syn. of Puccinia lindrothii q. v.* . .

PUCCINIA lateripes B. & Rav. an Aut-eu-puccinia. [Inoculation experiments.] W. A. Kellerman. Jour. Mycol. 9:107-9. Pl. II. May 1903.

PUCCINIA lindrothii Syd. n. sp. (Puccinia jonesii Aut. p. p.) on Velæa hartwegi (A. Gr.) Clt. & Rs. (Arracacia hartwegi S. Wats.) Acta Soc. Faun. et Fl. Fenn. 22:62. 1902.

PUCCINIA mariae-wilsoni Clint., *syn. of P. claytoniata q. v.* . .

PUCCINIA muhlenbergiae Arth., *syn. of Puccinia hibisciata q. v.*

PUCCINIA myrrhis Peck 25th Rep., *syn. of Puccinia osmorrhizae q. v.*

PUCCINIA osmorrhizae (Peck) Lindroth. [Aecidium osmorrhizae Peck, Puccinia myrrhis Peck 25th Rep., P. chaerophylli Tranzsch. F. Ross 217, P. bupleuri Berk. Grev. 1874, P. pimpinellae Aut. p. p.] Acta Soc. Faun, et Fl. Fenn. 22:17. 1902.

PUCCINIA nigrescens Peck, aecidial stage. [Description; "has not been previously reported in America." A. O. Garrett.] Trans. Kansas Acad. Sci. 18:148. 1903.

PUCCINIA notabilis Tracy & Earle, *syn. of P. splendens q. v.* . .

PUCCINIA pimpinellae Aut. p. p., *syn. of Puccinia osmorrhizae q. v.*

PUCCINIA sejuncta Syd. n. sp., in foliis vivis Hieracii albiflori. Ann. Mycolog. 1:326. July 1903.

PUCCINIA seymourii Lindr., synonym of Puccinia musenii Ell. & Ev. [Lindroth.] Acta Soc. Faun. et Fl. Fenn. 22:75. 1902.

PUCCINIA simplex Peck, *syn. of Puccinia solitaria q. v.* . . .

PUCCINIA sphaerospora Syd. et P. Henn. n. sp., in foliis vivis Metastelmatis schlechtendalii. Ann. Mycolog. 1:327. July 1903.

PUCCINIA sphalerocondra Lindroth n. sp., on Velæa arguta (Torr. & Gr.) Clt. & Rs. Acta Soc. Faun. et Fl. Fenn. 22:63. 1902.

PUCCINIA splendens Vize. [Puccinia notabilis Tracy & Earle.] Ann. Mycolog. 1: 328. July 1903.

PUCCINIA solitaria Syd. n.n. [Puccinia simplex Peck.] Monogr. Uredin. 1:483. 15 May 1903.

PUCCINIA windsoriae Burr. non Schw., *syn. of Puccinia hibisciata q. v.* . . .

PYRUS coronaria, host to Ascochyta coronaria Ell. & Davis n. sp. Trans. Wisc. Acad. Sci. Arts & Let. 14:94 1903.

RAMULARIA waldsteiniae Ell. & Davis n. sp., on leaves of Waldsteinia fragarioides Tratt. Trans. Wisc. Acad. Sci. Arts & Let. 14:99. 1903.

RAMULARIA waldsteiniae Ell. & Davis n. sp., on leaves of Waldheimeriae. Ann. Mycolog. 1:330. July 1903.

RELATIONS of Insects to Fungi, *see Fungi, The Relations* . .

RHIZOBIA, Contributions to the Biology of. III; Notes on the Winter and early Spring conditions of Rhizobia and Root Tubercles. Albert Schneider. Bot. Gaz. 36:64-7. July 1903.

RHIZOBIA, Outline of the history of Leguminous root Nodules and, with titles of literature concerning the Fixation of free Nitrogen by Plants, — III. Albert Schneider. Minn. Bot. Studies, 3:133-9. 3 July 1903.

RHIZOBIA and root Tubercles. [Winter and early Spring conditions of. Schneider.] Bot. Gaz. 36:64-7. July 1903.

RHIZOCTONIA, A Rosette Disease of Potatoes attributed to, *see Selby, A. D., A Rosette Disease.*

RHIZOPUS nigricans, formation of spores, *see Spores, Formation.*

ROT, Bitter, of Apples [Glomerella rufomaculans], *see Bitter Rot* . . .

RUST, Asparagus. [Notes on distribution.] Halsted, Byron D. and Kelsey, James A. An. Rep. N. J. State Agr. Exp. Sta. 1902, 23:403-8. 1903.

RUST of the Cultivated Snapdragon. [Puccinia antirrhini.] W. C. Blasdale. Jour. Mycol. 9:81-2. May 1903.

RUSTS and Mildews, Notes upon some, at Wernersville, Pa. Halsted, Byron D. and Kelsey, James A. An. Rep. N. J. State Agr. Exp. Sta. 1902, 23:419-420. 1903.

SAGITTARIA heterophylla Ph., host to Doassansia sagittariae confluens Davis n. forma. Trans. Wisc. Acad. Sci. Arts & Let. 14:92. 1903.

SAPROLEGNIA, Oogenesis in. Bradley Moore Davis. Bot. Gaz. 35:233-249, 320-349. Pl. IX-X. April and May 1903.

SARCOSOMA carolinianum Durand n. sp., attached to dead sticks among leaves, on damp wooded slopes. Jour. Mycol. 9:103. May 1903.

SARCOSOMA cyttarioides Rehm n. sp., on dead stems of Kalmia, Oak; on leaves of Chestnut, Rhododendron; also on living stems of Kalmia and Chestnut. Jour. Mycol. 9:104. May 1903.

SARCOSOMA, The Genus in North America. [Key and descriptions, including two new species.] Elias J. Durand. Jour. Mycol. 9:102-4. May 1903.

SARCOSOMA, Key to the North American species [Durand]. Jour. Mycol. 9:102. May 1903.

SCHAFFNER, John H. Laboratory Outlines for the Elementary Study of Plant Structures and Functions from the Standpoint of Evolution. The Higher Fungi and Lichens. Jour. Appl. Micr. & Lab. Meth. 6:2275-7, 2330-2, 2387-8. April, May, June 1903.

SCHNEIDER, Albert. Contributions to the Biology of Rhizobia. III; Notes on the Winter and early Spring conditions of Rhizobia and root Tubercles. Bot. Gaz. 36:64-7. July 1903.

SCHNEIDER, Albert. Outline of the history of Leguminous Nodules and Rhizobia, with titles of Literature concerning the Fixation of free Nitrogen by Plants. — III. Minn. Bot. Studies, 3:133-9. 3 July 1903.

SCHRENK, Hermann von, and Spaulding, Perley. The Bitter-rot Fungus. [Synonomy.] Science, N. S. 17:750-1. 8 May 1903.

SCHRENK, Hermann von, and Spaulding, Perley. The Bitter Rot of Apples. U. S. Dept. Agr. Bureau Pl. Industry, Bull. 44:1-54 Pl. I-VIII. 18 July 1903.

SCINDALMA tornatum Kuntze, *syn. of Elfvingia tornata q. v.* . .

SCLEROSPORA graminicola, Notes on. [Distribution.] Frank Lincoln Stevens. Jour. Mycol. 9:13. Feb. 1903.

SCUTIGER, *see Polyporaceae of North America. — V. The Genera.*

SCUTIGER caeruleoporus (Peck) Murrill n. n. [Polyporus caeruleoporus Peck.] Bull. Torr. Bot. Club, 30:429. Aug. 1903.

SCUTIGER cryptoporus (Ell. & Barth.) Murrill n. n. [Polyporus cryptoporus Ell. & Barth.] Bull. Torr. Bot. Club, 30:428. Aug. 1903.

SCUTIGER decurrens (Underw.) Murrill n. n. [Polyporus decurrens Underw.] Bull. Torr. Bot. Club, 30:428. Aug. 1903.

SCUTIGER ellisii (Berk.) Murrill n. n. [Polyporus ellisii Berk., Polyporus flavosquamosus Underw.] Bull. Torr. Bot. Club, 30:427. Aug. 1903.

TUBER, A Minnesota Species of. [T. lyoni Butters n. sp.] Fred. K. Butters. Bot. Gaz. 35:427-431. Figs. 1-3. June 1903.

UREDINEÆ of Bourbon County, Kansas, A provisional List of. A. O. Garrett. Trans. Kansas Acad. Sci. 18:147-150. 1903.

UREDINOPSIS americana Syd. n. sp., in foliis vivis Onocleæ sensibilis. Ann. Mycolog. 1:325. July 1903.

UREDO laeviuscula Diet. et Hol., *syn. of Thekopsora laeviuscula q. v.*

UREDO plucheæ Syd. n. sp., in foliis vivis Plucheæ camphoratæ. Ann. Mycolog. 1:330. July 1903.

USTILAGINEÆ, A Series of Specimens illustrating. A. B. Seymour. Jour. Mycol. 9:83-4. May 1903.

VELÆA arguta (Torr. & Gr.) Clt. & Rs., host to Puccinia sphalerocondra Lindroth n. sp. Acta Soc. Faun. et Fl. Fenn. 22:63. 1902.

VELÆA hartwegi (A. Gr.) Clt. & Rs., host to Puccinia lindrothii Syd. r. sp. Acta Soc. Faun. et Fl. Fenn. 22:63. 1902.

WALDSTEINIA fragarioides Tratt., host to Ramularia waldsteiniae Ell. & Davis n. sp. Trans. Wisc. Acad. Sci. Arts & Let. 14:99. 1903.

WEBSTER, Hollis. Clitocybe trullisata Ellis. [Popular description and habitat.] Boston Mycological Club, Bulletin No. 20. [3 pp. 1 pl.] June 1903.

WEEMS, J. B. and Pammel, L. H., *see Pammel, L. H. and* . .

WOOD, decaying, beneath the soil, host to Scutiger subradicatus Murrill n. sp. Bull. Torr. Bot. Club, 30:431. Aug. 1903.

NOTES FROM MYCOLOGICAL LITERATURE. VI.

W. A. KELLERMAN.

PROFESSOR J. H. SCHAFFNER FURNISHES ANOTHER INSTALLMENT of his Laboratory Outlines for the elementary study of Plant Structures and Functions from the standpoint of evolution, namely, the Higher Fungi and Lichens, in the Journal of Applied Microscopy, 6:2275-7, April 1903. The subjects are: Saccharomyces cerevisiae Meyen, Beer and Bread Yeast; Morchella esculenta (L.) Pers., Morel; Aspergillus herbariorum (Wigg.) Fisch., Common Green Mould; Uncinula salicis (DC.) Wint.; and Ustilago maydis (DC.) Tul.

NOTES ON SOME OF THE FUNGOUS DISEASES affecting Horticultural Crops, to-wit, Black Knot (Plowrightia morbosa Sch.), The Crown Gall (Dendrophagus globosus), Peach Yellows, and Peach and Plum Rosette, are given by R. S. Mackintosh in Alabama Agricultural Experiment Station Bulletin No. 124:93-101, May 1903.

IN THE ACTA PRO FAUNA ET FLORA FENNICA (22:13 et seq., 1902) J. Ivar Lindroth in the course of his article on Die Umbelliferen-Uredineen, points out that the American Rust on Osmorrhiza brevistylis DC., O. longistylis DC., O. nuda Torr., and Osmorrhiza sp. ought to be listed as Puccinia osmorrhizae (Peck) Lindroth, with synonomy as follows: Aecidium osmorrhizae Peck, Puccinia myrrhis Peck 25th Rep., P. chaerophylli Tranzsch. F. Ross. 217, P. bupleuri Berk. and P. pimpinellae Aut. p. p. This Rust is different from Puccinia chaerophylli Purt. Puccinia myrrhis Schw. occurs on Chaerophyllum procumbens Crantz. In his enumeration no North American species occur as hosts for Puccinia pimpinellae (Strauss) Mart., or for Puccinia chaerophylli Purt.

BEITRAEGE ZUR BIOLOGIE DER UREDINEEN, VON W. BANDI, in Hedwigia, 42:118-128, 42:129-152, 9 Mai 1903 and 4 Juli 1903, details culture experiments with Phragmidium subcorticium (Schrank) Winter, and Puccinia caricis-montanae Ed. Fischer. Die Untersuchungen sollen ein Beitrag sein zu der Frage der Spezialisation bei den Rostpilzen.

THE CONCLUDING PORTION OF TYCHO VESTERGREN'S ZUR PILZFLORA DER INSEL OESEL is given in Hedwigia, Heft 3, 1903. A large number of species is listed accompanied with critical notes; several new species are described.

SEVEN NEW SOUTH AMERICAN SPECIES OF FUNGI IMPERFECTI are described by H. et P. Sydow in Beiblatt zur Hedwigia, 42:(105)-(106), Mai 1903, under the title Beitrag zur Pilzflora Süd-Amerikas.

EINIGE NEUE JAPANISCHE UREDINEEN IV, Bieblatt zur Hedwigia, 42:(107)-(108), Mai 1903, contains the descriptions of eight new species by P. Hennings.

P. HENNINGS PUBLISHES EINE KURZE AUFZAEHLUNG of species received from the museum of Frau Gräfin Scheremetjeff, under the title Beitrag zur Pilzflora des Gouvernements Moskau, in Beiblatt zur Hedwigia, 42:(108)-(118), Mai 1903. Diagnoses of several new species are given.

A VERY CONVENIENT, MUCH CONDENSED OUTLINE, by W. A. Orton, of the Plant Diseases in the United States in 1902, is given on pp. 714-719 of the Yearbook of the United States Department of Agriculture, 1902 (published 1903). The fungi

causing the diseases and their prevalence are indicated, grouped according to the hosts.

GEORGE T. MOORE GIVES A VALUABLE ARTICLE on Bacteria and the Nitrogen Problem, in the Yearbook of the United States Department of Agriculture 1902:333-42, illustrated with 6 full-page plates. Investigation of the nitrogen-fixing bacteria has been carried on at the Bureau of Plant Industry in the laboratory of plant Physiology. It has been found "that by gradually reducing the amount of Nitrogen in the culture medium it is possible to greatly increase the nitrogen-fixing power of the germs, and that by proper manipulation their activity may be increased from five to ten times that which usually occurs in nature."

IN MALPHIGIA, ANNO XVII, FASC. I-III an interesting article by Pietro Voglino is entitled Sullo sviluppo della Ramularia aequivoca (Ces.) Sacc. The fourth item in his Conclusione is as follows: La Ramularia aequivoca (Ces.) Sacc., é molto probabilmente lo stato conidiale della Stigmatea ranunculi Fries.

A PROVISIONAL LIST OF THE UREDINEAE OF BOURBON COUNTY, KANSAS, by A. O. Garrett, is published in Vol. XVIII (pp. 147-150) of the Transactions of the Academy of Science, 1903. Hosts and dates of collecting are given after each of the listed species. The following are included: 9 species of Aecidium, 3 Coleosporium, 2 Gymnosporangium, 1 Melampsora, 20 Puccinia, 1 Pucciniastrum, 2 Uredo, and 8 Uromyces. Description is given of the Aecidia of Puccinia nigrescens Peck, which "has not been previously reported in America." Underground sori of teleutospores of Puccinia podophylli Schw. were found May 10th and 27th.

BULLETIN DE LA SOCIETE MYCOLOGUIQUE DE FRANCE, TOME XIX, 2e FASCICULE, issued April 30, 1903, contains the following articles: Pavillard et Lagarde, Myxomycètes des environs de Montpellier; P. Vuillemin, Importance taxinomique de l'appareil zygosporé des Mucorinées; P. Vuillemin, Le genre Tieghemella et la serie des Absidiées; G. Delacroix, Travaux de la Station de pathologie végétale; M. Molliard, Observations sur le Cyphella ampla Lév., obtenu en culture pure; Marin Molliard, Sur une condition que favorise la production des péritheces chez les Ascobolus; G. Bainier, Sur quelque espéces de Mucorinées nouvelles ou peu connues; L. Magnin, Un cas d'empoisonnement par l'Amanita muscaria.

THE ARTICLES IN BULLETIN TRIMESTRIEL DE LA SOCIETE MYCOLOGIQUE de France, Tome XIX, 3e Fascicule, are: E. Boudier, Quelque Ascomycètes nouveaux du Jura; Costantin et Lucet, Sur un Rhizopus pathogène; F. Guéguen, Recherches morphologiques et biologiques sur quelques Stysanus; N. Patouillard, Additions au Catalogue des Champignons de la Tu-

nisie; E. Boulanger, Sur la culture de la Truffe à partir de la spore; L. Matruchot, Sur la culture artificielle de la Truffe; M. Barbier, Liste annotée d' Hyménomycètes des environs de Dijon; A. Maublanc, Sur quelques espèces nouvelles de champignons inférieurs; M. Herrera, Sur le rôle prédominant des substances minerales dans les phénomènes biologiques.

DEANE B. SWINGLE GIVES HIS STUDIES IN SPORE FORMATION in the sporangia of Rhizopus nigricans and in Phycomyces nitens in Bulletin 37 (pp. 1-40) U. S. Department of Agriculture, Bureau of Plant Industry. The article is illustrated by six lithographic plates. After a resumé of work previously done on the Mucorineae by Corda (1838), van Tieghen (1873-6), Strasburger (1880), Bügsen (1882), Léger (1896), Thaxter (1897), Harper (1899), and Hans Bachmann (1899), touching the life history and gross anatomy of nearly all the species — there being "in regard to the cytological details the widest difference of opinion, chiefly owing to the fact that only a few forms have been studied with the aid of the most recent methods" — Mr. Swingle details his work on the two species, followed by eight or nine pages of general considerations and summary, also a page of Index to Literature. It is interesting to note that in the four genera of Mucorineae most carefully studied no two are alike in respect to the processes of spore formation.

ANNALES MYCOLOGICI, VOL. I, No. 3, MAI 1903, contains the following articles: Guilliermond, Contribution à l'étude de l'épiplasme des Ascomycètes et recherches sur les corpuscules métachromatiques des Champignons; Patouillard, Note sur trois Champignons des Antilles; Maire et Saccardo, Notes mycologiques; Saccardo, Una malattia crittogamica nelle frutta del mandarino (Alternaria tenuis, forma chalaroides Sacc.); Traverso, Diagnoses Micromycetum novorum italicorum; Sydow, Beitrag zur Pilzflora des Litoral-Gebietes und Istriens; Bubák, Zwei neue, Monocotylen bewohnende Pilze; Dietel, Bemerkungen über die Uredineen-Gattung Zaghouania Pat.

DASS EIN VERHAELTNISMAESSIG GROSSER PROZENTSATZ DER PILZE doppelt und mehrfach, oft in ganz verschiedenen Gattungen beschrieben ist, leidet keinen Zweifel, is the keynote to an article by Franz v. Höhnel, in Beiblatt zur Hedwigia, 42:(185)-(188), July 4, 1903, entitled Mykologische Irrtumsquellen. It is really a second communication on this subject; — and there as here many cases are enumerated and corrected.

REMARQUES TAXONOMIQUES ET CYTOLOGIQUES SUR le Botryosporium pulchellum R. Maire (Cephalosporium dendroides Ell. & Kell.) by René Maire, published in Annales Mycologici (1:335-340, July 1903), alludes to the articles published in the Journal of Mycology concerning this fungus. As to the syste-

matic aspect it may be said that the name accepted by us (i. e. Corda's name) is rejected by Mons. Maire, his statement being: "En résumé, à notre avis, les dénominations antérieures à la découverte de la *tête condifère*, c'est à dire à Costantin, doivent être reléguées dans le chaos des anciens noms douteux et inapplicables." As two species are involved his list is as follows: 1. Botryosporium pyramidale Cost.; 2. Botryosporium longibrachiatum (Oud.) Maire, (Botrytis longibrachiata Oud., B. [Polyactis] doryphora Pound & Clem., B. pulchellum R. Maire, Cephalosporium dendroides Ell. & Kellerm.)

BACTERIA IN MODERN ECONOMIC AGRICULTURE is the title of an instructive article by Professor Albert Schneider in the August number of the Popular Science Monthly (66:333-343). The Rhizobia, or Nodule Bacteria, "assimilate free nitrogen in artificial culture media or when not symbiotically associated with leguminous plants." Therefore it would seem probable that Rhizobia of leguminous plants might be modified by culture so as to induce them to grow on the roots of other plants, say corn, wheat, rye, barley, etc. Experimental results are not yet conclusive, yet "the indications are that they will finally prove successful." Then there may be other organisms or soil bacteria, not found in leguminous root nodules, that can fix free nitrogen, and which may be especially adapted to gramineous plants. "It would appear that the Bacillus ellenbachiensis of Caron is such an organism. . . . It would be especially advantageous, because, in contradistinction to Rhizobia, it forms spores. Spore-bearing cultures would be desirable because they would keep better and longer."

THE FIFTH INSTALLMENT OF THE POLYPORACEAE OF NORTH AMERICA, by William Alphonso Murrill, is published in the Bulletin of the Torrey Botanical Club (30:423-434, Aug. 1903). The genera Crytoporus, Piptoporus, Scutiger, and Porodiscus are included, the species being those found chiefly under the genus Polyporus in Sacardo. Those treated formerly (groups of the genus Fomes, as this term is generally used) are for the most part perennial with large stratified sporophores. The plants included in this paper are annual and their fruit-bodies are less conspicuous, their mycelium being usually comparatively limited in extent. They are mostly terrestial, somewhat fleshy and allied to the Boletaceae. Full synonomy, notes and distribution are given. One new genus is proposed, also three new species; ten new names (or new combinations) are given.

BRUCE FINK DISCUSSES SOME ECOLOGIC FACTORS relative to the distribution of Lichens, in Some Common Types of Lichen Formations, Bulletin of the Torrey Botanical Club, 30:412-418, July 1903. He gives a list of the Lichen species

most commonly occurring in the two formations, namely, The Lecanora Formations of Exposed Bowlders, and The Lecanora calcarea contorta Formations of Exposed Horizontal Limestone Surfaces (or of Limy Pebbles).

BULLETIN NO. 44, BUREAU OF PLANT INDUSTRY, U. S. Department of Agriculture, (issued July 18, 1903) is devoted to the subject of Bitter Rot of Apples, the authors being Hermann von Schrenk and Perley Spaulding. It is illustrated with twelve plates. It is an exhaustive treatise giving an historical account, distribution, description of the rot, the bitter-rot fungus, the canker stage, remedial measures, and index to literature. The Bitter Rot (or Ripe Rot) of Apples was, according to Curtis's catalogue, in the United States before 1867, but it was not until 1874 that the fungus was described by Berkeley. Names in common use as Gloeosporium fructigenum, Gl. rufomaculans, and Gnomoniopsis fructigena, have been relegated to synonomy by the use of a new generic name, Glomerella, proposed by the authors — not however published here for the first time as might be supposed: see Science, N. S. 17:751. 8 May 1903.

A NOTICE OF WORK DONE ON THE WHITE ROT OF THE GRAPE (Coniothyrium diplodiella) by Gy. de Istvánffi is given in the Botanical Gazette (p. 147-8, Aug. 1903), being a review of that author's Etudes sur le rot livide de la vigne, published by the Hungarian Minister of Agriculture in 1902. A minute description of the development of the disease is given, including the reactions induced in the host plant by the fungus. The most interesting part is that which deals with the effects of various toxic substances on the fungus.

B. O. LONGYEAR GIVES Some Suggestions for the Beginner in Collecting and Studying the Fleshy Fungi, in the June No. of the Journal of Applied Microscopy and Laboratory Methods (6:2369-73, 1903).

COLLECTING AND PRESERVING LICHENS is the title of a two-page article by E. E. Bogue, for the benefit of beginners, in the June No. of the Journal of Applied Microscopy and Laboratory Methods (6:2373-4, 1903).

THE THIRD INSTALLMENT OF BACTERIOLOGY FOR HIGH SCHOOLS by W. D. Frost and E. G. Hastings is published in the June No. of the Journal of Applied Microscopy and Laboratory Methods (6:2383-5, 1903). This deals with the microscopical examination of Bacteria.

PROFESSOR JOHN H. SCHAFFNER CONTINUES HIS LABORATORY OUTLINES for the Elementary Study of Plant Structures and Functions from the Standpoint of Evolution in the June No. of the Journal of Applied Microscopy and Laboratory Methods

(6:2387-8, 1903). To represent the Higher Fungi [continued] and Lichens he uses Bovista plumbea, Parmelia caperata, Sticta amplissima and Endocarpon miniatum.

THE GENUS FOMES is the 3d installment of the Polyporaceae of North America, by William Alphonso Murrill, Bulletin of the Torrey Botanical Club, 30:225-232, April 1903. Fomes, usually credited to Fries, was used by him for a subdivision of the genus Polyporus. Gillet (1878) raised Fomes to generic rank. The author gives a "synopsis" (dichotomal key) to the 12 species — two of which are new species, and three others receive new names. Full synonomy and distribution, also notes are given for each of the species.

OOGENESIS IN SAPROLEGNIA BY BRADLEY MOORE DAVIS, Contributions from the Hull Botanical Laboratory, XLVI, Botanical Gazette, 35:233-249, 320-349, plates IX and X, April and May 1903, is concerned chiefly with the events of oogenesis and a comparison of this process with the development of zoospores. The paper concludes with Theoretical Considerations, which deals with a number of topics suggested by the study in relation to recent investigations upon Phycomycetes and Ascomycetes, followed by an alphabetical list of the authors of the literature cited.

A STUDY OF THE FOOD VALUE OF SOME OF THE EDIBLE FUNGI of Ames, Iowa, by J. B. Weems and Alice W. Hess, is given in the Proc. 23d An. Meeting Soc. Prom. Agr. Sci. 1902. (pp. 165-172.) During the summer of 1901 the authors collected and analyzed Coprinus atramentarius, C. micaceus, Hirneola auricula-judæ, Hydnum coralloides, Morchella esculenta, Lycoperdon giganteum, L. gemmatum, Pleurotus sapidus, and P. ulmarius. Tables are compiled also by the analysts. This statement is made: Though the full value of the mushroom is materially lowered when the deduction is made for the non-digestable protein, and lowered more than the full value of the vegetables when the undigestable fat and carbohydrates as well as the protein is deducted, yet the mushroom would fall within the rank of the fresh vegetables if the whole of the carbohydrates and fats were digestable.

HOLLIS WEBSTER GIVES AN INTERESTING DESCRIPTION of the peculiar Clitocybe trullisata Ellis (Boston Mycological Club, Bulletin No. 20, June 1903) which may be found in "any old sandy field" in Eastern Massachusetts, for example about Plymouth, on Cape Cod, the dunes of Ipswich or the farther inland sandy plains. The fungus looks as if it hadn't much of a stem. There is a stem, long and surprisingly stout and swollen, but it is out of sight, deeply buried in the sand. This stem is of a metallic violet color when the sand is rubbed off; the interior of the broken stem shows same color. A dark violaceous tint appears in the

gills though the spores are white. A full-page plate in the Bulletin gives a good idea of the appearance of this Clitocybe.

A LIST OF SPECIES OF FUNGI, Hymenomycetes, Gastromycetes, and Ascomycetes, by Jennie F. Conant, is given in a four-page Bulletin (No. 19) of the Boston Mycological Club, issued Feb. 5, 1903, which represents the collection by members, exhibited at the Horticultural Hall, Boston, during the year 1902. The interesting list is too long to count — say over three hundred species.

A ROSETTE DISEASE OF POTATOES, attributed to the sterile fungus Rhizoctonia, is the title of Bulletin 139, Ohio Agr. Exp. Sta., April 1903. Perhaps guilty but not proved would express the attitude of mind of the author of the Bulletin — at least he says "The sterile fungus, Rhizoctonia, is indicated as the cause in the instances stated, by the constant presence and a high degree of probability attaches to this indication." A list of some articles relating to diseases of the Potato attributed to Rhizoctonia includes twenty items chronologically, arranged the dates being 1858-9 to 1902.

CONTRIBUTIONS FROM THE CRYPTOGAMIC LABORATORY OF HARVARD UNIVERSITY, LV, by R. Thaxter, consists of Mycological Notes, 1-2, namely, A New England Choanephora (described by Berkeley in 1875 under the name of Rhopalomyces cucurbitarum), and Notes on Monoblepharis. Objection is entered against dividing the latter into genera (or even subgenera) which Lagerheim has proposed. A Key is appended for the six species of this alga-like genus Monoblepharis. This No. of the contributions appears in Rhodora, 5: 97-108. April 1903.

A MINNESOTA SPECIES OF TUBER, namely Tuber lyoni, is reported by Fred K. Butters, in the June No. (1903) of the Botanical Gazette (pp. 427-31). The specimens were found March 11, in the leaf-mould about the base of small group of Bass-wood trees, in a mature condition, doubtless formed late in the previous autumn.

THE MORE IMPORTANT DISEASES OF FORAGE PLANTS as given by David Griffiths in Forage Conditions and Problems of Eastern Washington and Adjacent Regions, U. S. Department of Agriculture, Bureau of Plant Industry, No. 38 (pp. 43-4), are caused by the following Smuts: Ustilago hypodites, U. scolochloa, U. bromivora, U. striæformis, and Tilletia fusca. This class of parasitic fungi injures more (the author states) than one would suppose, the development of native economic plants. Reference is made in one case to meadows of the valuable Sprangle-top (Scolochloa festucacea), "in which one-half to two-thirds of the vegetation consisted of this grass, and one-half of the plants were smutted."

OUTLINE OF THE HISTORY OF LEGUMINOUS ROOT NODULES AND RHIZOBIA with Titles of Literature concerning the Fixation of Free Nitrogen by Plants III, is the title of a short article by Albert Schneider in the Minnesota Botanical Studies, Third Series, Part II, July 3, 1903 (pp. 133-9). The first installment of titles (by Dr. D. T. McDougal) was published in this Series in 1894, the second (by Prof. Albert Schneider) in 1897. These and the present list include 780 titles. In a history to be prepared the following outline will be followed: First Period: Initial Study of Leguminous Root Tubercles — from Clos (1848) to Lawes and Gilbert (1860); Second Period: Collateral Investigation which led to the Discovery of the True Nature of Root Tubercles — from Lawes and Gilbert (1860) to Frank (1879); Third Period: The Scientific Investigation of Leguminous Root Tubercles and Rhizobia — from Frank (1879) to Schneider (1893).

LICHENS OF THE NORTHERN BOUNDARY is the Title of the VIIth paper of Contributions to a Knowledge of the Lichens of Minnesota, by Bruce Fink, published in Part II (pp. 167-244), Minnesota Botanical Studies, July 3, 1903. A long list of Lichen Formations is discussed, followed by an enumeration of 310 species and varieties with dates and habitats.

PROF. ALBERT SCHNEIDER PUBLISHES HIS THIRD CONTRIBUTION to the Biology of Rhizobia under the title of Notes on the Winter and Spring Condition of Rhizobia and Root Tubercles, Botanical Gazette, 36:64-7, July 1903. He says that most of the Rhizobia are killed during the winter months; the tubercles of perennial herbaceous legumes attain their full growth during the early part of the first season, mostly die and decay at the close of the second season.

FLIES AS CARRIERS OF BACTERIA, work done by two students in the Eastern Illinois State Normal School, is published and illustrated in School Science, 3:16-20, April 1903; the same is reproduced in Jour. Appl. Micr. 6:2402-4, July 1903. "The work is of value, not only on account of its scientific interest, but also because it points the way to a new field of effort opened to secondary students."

A GALL UPON A MUSHROOM, caused by dipterous larvae of Mycetophilidae, found at Ithaca, N. Y., Sept. 12, 1892 — the plants being two specimens of Omphalia campanella — illustrated by several figures, and described in detail, by Charles Thom, is published in the Botanical Gazette, 36:223-5, September 1903.

THE BOSTON MYCOLOGICAL CLUB has issued interesting Bulletins from time to time. Nos. 15 and 16, (8 pp.), June 1901 are devoted to the genus Coprinus, author Edwin A. Daniels. Descriptions are given of all the species so far reported for the

United States, Massee's Classification being followed. Nos. 17 and 18, (8 pp.), December 1901, are searching reviews of several books on Mushrooms, by Hollis Webster.

W. C. COKER OFFERS IN THE JOURNAL OF APPLIED MICROSCOPY, 6:2411-2, July 1903, some suggestions on Algae and Fungi for class work. Rhizopus is not always satisfactory for showing sexual reproduction and Sporodinia grandis was found to be a good substitute.

BACTERIOLOGY FOR HIGH SCHOOLS, IV. Microscopical Examination (continued) is the subject of a short illustrated article by W. D. Frost and E. G. Hastings, Journal of Applied Microscopy, 6:2426-8, July 1903.

THE MYCOLOGICAL ARTICLES IN THE REPORT OF THE BOTANIST, 23d Annual Report of the New Jersey State Agricultural Experiment Station, for the year 1902 (pp. 337-422, published in 1903), are as follows: Notes upon Club-root, The Mildew of Lima Bean, The Asparagus Rust, Fungi as related to Weather, Notes upon some Rusts and Mildews at Wernersville, Pa., and Fungus Enemies of Plants in Nova Scotia.

THE BLACK ROT OF CABBAGE caused by the bacterium Pseudomonus campestris (Pam.) Smith, can not be prevented by the removal of the affected leaves, is the conclusion reached after four years of practical field tests by F. C. Stewart and H. A. Harding, whose work is reported in full in the New York Agricultural Experiment Station Bulletin 232:43-65, Pl. I-II, April 1903.

MRS. CAROLYN W. HARRIS LISTS THE LICHENS belonging to Sticta and to Nephroma and Solorina, with popular descriptions or notes and several figures, in the Bryologist, 6:55-8, and 76-9, July and Sept. 1903.

BULLETIN 117, KANSAS EXPERIMENT STATION contains an account of Bacteria of the Soil with results of cultures carried on through a series of years by N. S. Mayo and A. T. Kinsley. They call attention to the high bacterial content of soil containing Buffalo Grass, and to the marked decrease in the bacterial content in the western part of the state.

THE FOURTH NUMBER OF THE ANNALES MYCOLOGICI (1:297-390, July 1903) contains the following articles: Traverso, Primo elenco die Micromiceti di Valtellina; Sydow, Neue and kritische Uredineen; Maire, Remarques taxonomiques et cytologiques sur le Botryosporium pulchellum R. Maire (Cephalosporium dendroides Ell. & Kell.); Heinze, Einiges, über Säurebildung durch Pilze, insbesondere auch über Essigsäure- und Oxalsäurebildung durch Aspergillus niger; Zahlbruckner, Neue Flechten.

In an Article Published in Hedwigia (Beiblatt, 42: (179)-(181), Juli 1903,) it is stated by P. Dietel that a Phragmidium on Potentilla, usually referred to either Ph. potentillae (Pers.) Karst., or Ph. obtusum (Kze. & Schmidt) Wint., is a new species and it is described under the name of Ph. potentillae-canadensis Diet. The same author also refers the Coleosporium on Veronia noveboracensis, heretofore called C. vernoniae B. & C., to the genus Stichopsora; and hence records it as Stichopsora vernoniae (B. & C.) Diet.; likewise our Coleosporium solidaginis is given as Stichopsora solidaginis (Schw.) Diet.

A Beautiful Pluteolus, is noted by H. Webster in Rhodora, 5:197-9, Aug. 1903. The delicate Pluteolus expansus Peck was observed at Alstead, N. H., late in July and a careful study justifies the place of this plant in classification now occupied — at first having been placed in the genus Galera. Mr. Webster points out that the substance of the stipe and pileus is plainly not homogeneous. He adds: "The viscid, greenish yellow caps, elevated on long slender stems, white tinged with yellow, announced a novelty at first sight."

Hypochnus sp., Another Apple Rot following Scab, is reported at some length and illustrated by four plates in the New York Agricultural Experiment Station Bulletin No. 255, July 1903. This is similar in appearance to Cephalothecium roseum which the same author, H. J. Eustace, showed also to be parasitic. It seems to be an undescribed species —a wound parasite and can not grow through sound epidermis.

The Section of Lepidei is presented in the dichotomal key, by F. S. Earle, of the North American species of Lentinus in Torreya, 3:58-9, April 1903. It contains thirty-nine species. Other keys in the same periodical by the same author, published so far this year, are species (26) of Panus (pp. 86-87), species (10) of Pluteolus (pp. 124-5), of Galera (pp. 134-6) thirty-eight species.

Articles on Bacteriology for High Schools, plain directions for work, illustrated with figures, have been published this year in the Journal of Applied Microscopy by W. D. Frost and E. G. Hastings, on pp. 2270-2273 (April), 2383-5 (June), and 2426-8 (July).

A New Name is again Proposed for the Bitter-rot Fungus by Herman von Schrenk and Perley Spaulding, — Science, N. S., 17:749-51, 8 May 1903. The name is Glomerella rufomaculans (Berk.) Spaulding & von Schrenk. The genus Glomerella von Schrenk & Spaulding n. n. replaces Gnomoniopsis Stoneman. Septoria rufomaculans on Grapes was described by Berkeley in 1854. He described Gloeosporium fructigenum on apples in 1856. These two are the same. In 1898 Clinton, finding

the perfect stage of the fungus, placed it in Miss Stoneman's genus Gnomoniopsis; the latter being invalidated by preoccupation, the name as above is now the appropriate one.

WILLIAM ALPHONSO MURRILL CONTINUES his studies of the Polyporaceae of North America, giving the fourth installment, namely, the genus Elfvingia, in the May. No. of the Bulletin of the Torrey Botanical Club (30:296-301, 1903). Now we have Elfvingia fomentaria for Fries' Polyporus reniformis; Elfvingia megaloma for what has usually been called Polyporus applanatus Pers. by American botanists, the commonest species of Shelf-Fungus, though it is Polyporus leucophaeus Mont. as now agreed by all mycologists.

FUNGI ON OLD LOGS AND STUMPS is the title of a short popular article in the June (1903) No. of the Plant World (6:139) by C. L. Shear. A beautiful plate of a Hydnum and a Polyporus is given.

THE MYCOLOGICAL ARTICLES IN HEDWIGIA, Heft 2 (Band XLII, 28 März 1903), are as follows:—Zur Pilzflora der Insel Oesel, Tycho Vestergren; Fungi australiensis, P. Hennings; Ueber die Uromyces-Arten auf Lupinen, P. Dietel; Beitrag zur Kenntnis einiger Phycomyceten, Fr. Bubák.

THE MYCOLOGICAL ARTICLES IN HEDWIGIA, Heft, 3 (Band XLII, 9 Mai 1903), are as follows:—Zur Pilzflora der Insel Oesel (Schluss), Tycho Vestergren; Beiträge zur Biologie der Uredineen, W. Bandi; Beitrag zur Pilze Süd-Amerikas, H. et P. Sydow; Einige neue japanische Uredineen IV, P. Hennings; Beitrag zur Pilzflora des Gouvernements Moskau, P. Hennings.

THE MYCOLOGICAL ARTICLES IN HEDWIGIA, Heft 4 (Band XLII, 4 Juli 1903), are as follows:—Beiträge zur Biologie der Uredineen (Schluss), W. Bandi; Sphæroideen aus Thüringen, A. Diedicke; Ascomyceten-studien I, H. Rehm; Ueber einige Ramularien auf Doldengewächsen, Franz v. Höhnel; Bemerkungen über einige nordamerikanische Uredineen, P. Dietel; Einige deutsche Dung bewohnende Ascomyceten, P. Hennings; Mykologische Irrtumsquellen, Franz v. Höhnel; and Zwei neue Früchte bewohnende Uredineen, P. Hennings.

FASCICULUS III OF SYDOW'S MONOGRAPHIA UREDINEARUM was published May 15, 1903. The pp. are 385-592; the list of species 596-879. The host plants are the families Umbelliferæ to Moraceæ. Fifteen new species (or varieties) are described, of which two belong to North America, namely, Puccinia euphorbia intumescens Syd. nov. var., on Euphorbia calyculata (Mexico), and Puccinia gemella Diet. & Holw. n. sp. (in Litt.) on Caltha leptosepala (Tacoma, Wash.). The new name Puccinia solitaria Syd. replaces Puccinia simplex Peck (nec Kœrn), and

claytoniata (i. e. Puccinia claytoniata [Schw.] Syd.) is restored to the Rust that occurs on Claytonia; the common designation for this has been Puccinia mariæ-wilsoni Peck.

H. Diedicke Calls Attention to the Fact that Die Aecidien der Puccinia stipæ (Op.) Hora (Annales Mycologici, 1: 341-3, July 1903), of which the name of Arthur appears as the author in Bulletin of the Iowa Agricultural College 160, 1884, and in the Bulletin from the Laboratories of Natural History, State University of Iowa (1898, p. 389), have been obtained by cultures on species of Thymus. The author also details his own experiments showing that the æcidial stage of this Rust also inhabits Salvia silvestris.

The Editor of Annales Mycologici has decided to publish also lichenological literature, and in the July No. (pp. 354-361) prints the Latin diagnoses of ten new species of Lichens by A. Zahlbruckner. One new genus is proposed, namely, Pseudoheppia A. Zahlbr.

In the article Neue und Kritische Uredineen by H. & P. Sydow, Annales Mycologici, 1:324-334 July 1903, nine of the species are American. It is interesting to note that one of them is on leaves of a host, namely, Aecidium aikeni on Thalictrum purpurascens, that harbors also another known fungus, *i. e.* Aecidium thalictri-flavi. The authors point out that Tracy and Earle's Puccinia notabilis is a synonym of Puccinia splendens Vize.

Zur Entwickelungsgeschichte, Morphologie und Systematik Der Flechten von Birger Nilson, is the title of a thorough paper published in the Botaniska Notiser, 1903:1-33.

In the Revista Agronomica (Lisboa) for June 1903, J. Bresadola describes a new genus (with one species) of Hymenogastraceæ, namely, "Torrendia Bres. n. gen.—etym. a cl. Camillo Torrend Societatis Jesu floræ mycologicæ lusitanæ scrutatore sollertissimo."

Der Chrysanthemum-Rost, II, Von Dr. Ernst Jacky, published in Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten, II Abteilung, 10:369-381, 1903, deals with the question of identity of the Hemi-Puccinia that occurs on Chrysanthemum chinense in Japan, with that found in Europe and America (on Chrysanthemum indicum). Culture experiments are detailed, and the conclusion reached that they are one and the same species. The name and synonomy are as follows: Puccinia chrysanthemi Roze; syn. P. chrysanthemi chinensis P. Henn., P. pyrethri Rabh. p. p., Sydow (Monogr. Ured. 1:45), Uredo chrysanthemi Roze, and P. hieracii Mart. p .p.

THE RELATIONS OF INSECTS TO FUNGI are quite fully outlined under the above title, by Perley Spaulding in the Plant World, 6:182-4, August 1903. Many Insects are appropriated by fungi as a base upon which to grow. Some of the cases cited are cicadas, ants, locusts, chinch bugs, flies, bees, wasps, beetles, moths, and butterflies. Of plant diseases which are known to be carried by insects the author mentions Ergot, Smuts, Brown-rot, Bitter-rot, some of the Rusts, and a few of the bacterial diseases. The Ambrosia fungi are used as food by some wood-boring beetles. Honey bees have been caught taking the spores of the Bramble Rust.

THE BOTANICAL GAZETTE PUBLISHES A BRIEF REVIEW of the investigations of J. Brezezinski (Bull. Acad. Sci. de Cracovie, 1903:95-143. pls. 2-8.) who says the canker disease of trees, long attributed to Nectria ditissima, is never caused by this fungus, which in the opinion of the author is a mere saprophyte on dead portions of the bark. The canker wound is therefore one of the external manifestations of the disease (Bacteriosis) from which the tree is suffering. The author regards certain Bacteria which he found growing in the wood as the true cause of the injury — three species being described, namely, Bacterium mali on apple, B. pyri on pear, and B. coryli on Hazel.

A SHORT NOTE IN THE BULLETIN OF THE BOTANICAL DEPARTMENT, Trinidad, No. 38 (p. 551, note 523), 1903, calls attention to the occurrence in that country, recently detected, of the Cacao Disease (Witches' Broom), the Surinam disease known as Exoascus theobroma, Ritzema Bos. In the previous No. (38; p. 507, note 496) it is stated that Cordyceps ravenelii B. et C. had been found on Cacao estates in Trinidad.

THE STATE OF ALABAMA PASSED A LAW, March 5, 1903, designed (among other things) to exclude Crop Pests of all kinds from that State. We note that the following Fungous Diseases are enumerated by the State Board of Horticulture (the members of which are to carry the law into effect), as constituting "infection in trees and plants, the same when occurring in nursery stock to be destroyed:" Black Knot (Plowrightia morbosa), Crown Gall (Dendrophagus globosus), Peach Yellows, and Peach and Plum Rosette. Other states have laws pertaining to fungous diseases — to which reference will be made later.

CULTURES OF UREDINEAE IN 1902, Bot. Gaz. 35: 10-23, Jan. 1903, by Dr. J. C. Arthur, is his third article of a series of reports upon the cultures of Plant Rusts. It is devoted largely to the heteroecious grass and sedge Rusts. With two assistants he was able to do a large amount of valuable work. Forty-three species were used; in no case was success attained where definite clues derived from field observations were lacking. Fourteen

species were tried by the "guessing method" and the failures reported. Twelve species of rusts were successfully grown that have been studied with success before, reported previously by Arthur and others; some additional hosts are given. Successful cultures were made establishing the aecidial and teleutosporic association, heretofore unknown, of seven heteroecious grass and sedge Rusts. These are Uromyces aristidae E. & E., aecidium on Plantago rugelii Dec.; Puccinia jamesiana (Pk.) Arth., aecidium on Asclepias incarnata L. and A. syriaca L.; Puccinia impatientis (Schw.) Arth., aecidium on Impatiens aurea Muhl.; Puccinia subnitens Diet., aecidium on Chenopodium album L.; Puccinia amphigena Diet., aecidium on Smilax herbacea L. and S. hispida Muhl.; Puccinia simillima Arth., aecidium on Anemone canadensis L.; and Puccinia caricis-solidaginis Arth., aecidium on Solidago canadensis L., S. serotina Ait., S. caesia L., S. ulmifolia Muhl, and S. rigida L.

A KEY TO THE NORTH AMERICAN SPECIES OF STROPHARIA — 12 in number — is given by Prof. F. S. Earle in Torreya, 3:24, Feb. 1903. It is on the dichotomal plan, similar to the keys of several groups prepared by the same author last year, and previously noticed in these Notes.

RASPBERRY CANE BLIGHT AND RASPBERRY YELLOWS is the title of a Bulletin (N. Y. Agr. Exp. Sta. 226:331-366. Dec. 1902) by F. C. Stewart and H. J. Eustace. The Blight caused by Coniothyrium (possibly C. fuckelii Sacc.) not by a Phoma as previously reported by the authors. The cause of the Yellows is undetermined.

HERMANN VON SCHRENK IS THE AUTHOR OF AN EXHAUSTIVE PAPER on A Disease of the White Ash Caused by Polyporus fraxinophilus, U. S. Dept. Agr. Bureau Pl. Industry, Bull. 32: 1-20, Pl. I-V. 28 Feb., 1903. The divisions of the subject are geographical distribution, susceptibility to this disease, method of attack, description of diseased wood, the sporophore, microscopic changes in the wood, growth of the fungus in dead wood, remedies, description of the five plates.

BULLETIN DE LA SOCIETE MYCOLOGUIQUE DE FRANCE, Tome XIX, ler Fascicule, contains the following original articles: Recherches sur la germination des spores dans le Saccharomyces ludwigii Hansen, Pl. I (Guilliermond); Sur le Sterigmatocystis pseudonigra (Costantin et Lucet); Espèces critiques d'Agaricenées (Godfrin); Remarques sun la morphologie et le développement de l' Hilminsporium macrocarpum Grev., Pl. II et III, (F. Guéguen); Du rôle des Ecoles normales departmentales au point de vue de l' enseignement de la Mycologie pratique (J. Costantin).

PROFESSOR M. C. POTTER GIVES IN THE JOURNAL OF THE BOARD OF AGRICULTURE, 9:320, pl. IV, Dec. 1902, an account of a new Potato Disease, occurring in England, caused by Chrysophlyctis endobiotica (Chytridineæ) described by Schilberszky in 1896, first found in Hungary. The affected tubers present large convoluted irregular tumour-like swellings. The parasite appears in the diseased tissues as a globular protoplasmic mass (plasmodium), destitute of cell-wall and without any trace of mycelium.

MYCOLOGICAL NOTES, No. 13, (pp. 121-132) C. G. Lloyd, Cincinnati, Ohio, was issued Feb. 1903. The notes are 214-231, devoted to Catastoma (3 species), Mitremyces (3 species, all figured), and miscellaneous matters.

IN HEDWIGIA, BAND XLII, HEFT 2, pp. 76-96, is published by Tycho Vestergren an article entitled Zur Pilzflora der Insel Oesel, which is an enumeration of 290 species of Fungi collected during a six-weeks collecting trip. The groups most largely represented are Uredineæ (79 species), Ustilagineæ (12 species), Peronosporaceæ (22 species), Pyrenomycetes (41 species), Discomycetes (25 species), Sphræropsideæ (46 species), and Hyphomycetes (48 species). Descriptions of ten new species are given.

BACTERIOLOGY FOR HIGH SCHOOLS, first paper, by W. D. Frost and E. G. Hastings, is published in the Journal of Applied Microscopy and Laboratory Methods (6:2205-8, March 1903). The apparatus needed is described and the list of needed chemicals given. Such articles by specialists are to be highly commended. The few better equipped High Schools could well undertake work of this kind — but perhaps putting too much college work into them even should not be encouraged.

ONE SHORT MYCOLOGICAL ARTICLE, namely, Addenda ad Floram Sardoam by S. Belli [list and the description of a new species] is given in the Bulletino della Societa Botanica Italiana for May and June (No. 5-6, 1903).

THE ARTICLES CONTAINED IN THE SEPTEMBER (1903) No. OF ANNALES MYCOLOGICI are as follows: Höhnel, Mycologische Fragmente; Dietel, Ueber die Teleutosporenform von Uredo laeviuscula D. et H. und über Melampsora fagi D. et Neg.; Maire et Saccardo, Sur un nouveau genre de Phacidiacées; Vuilleman, Le Syncephalus adunca sp. nov. et la série des cornutae; Saccardo e Traverso, Contribuzione alla Flora micologica della Sardegna.

DR. J. J. DAVIS HAS DISTRIBUTED HIS THIRD SUPPLEMENTARY LIST of parasitic Fungi of Wisconsin, as a reprint from the Transactions of the Wisconsin Academy of Sciences, Arts and Letters, Vol. XIV, part I. He gives many additional hosts (pp. 84-93) and a list (p. 93 et seq.) of species not recorded in the

previous lists, the latter containing 101 names. A few new species are described, and new combinations proposed. The author referring to such names as P. "caricis-asteris", P. "caricis-erigerontis" says: "As it is becoming evident that there are a number of species of Rusts on *Carices* this method of forming specific names from the generic names of both Aecidial and Rust hosts would, if carried out be of much assistance in understanding them." This is a good hint, practical in some cases — but of course the license could not be sanctioned for throwing aside heretofore published names or combinations framed in accord with the accepted usage.

A VERY COMPREHENSIVE TREATISE ON THE FUNGOUS DISEASES OF GRASSES is that by L. H. Pammel and J. B. Weems in the Iowa Geological Survey, Bulletin 1 (pp. 185-292, 1901). Historical and descriptive notes are given of all the common fungi occurring on the native and cultivated grasses. Very many text figures and plates add much to the value of the article, which will prove very useful to beginners and amateurs, and even to professional botanists. The date in the preface shows that it was completed in 1899, but evidently there was considerable delay in publication. Consequently the nomenclature is not always such as the American mycologists use to-day.

DOTT. C. MASSALONGA IN NOTE MICOLOGICHE published in Malphigia, An, XVII, Fasc. IX. pp. 419-423, discusses the following: (1) Sulla causa di un precoce disseccamento delle foglie di Quercus pubescens Willd. (with description of Gloeosporium nervicolum C. Massal. in litt.); (2) Sull antracnosi delle foglie di Populus tremula L.; (3) Di un ifomicete che vive parassita sul tallo di Candelaria vulgaris A. Massal. (with description of Fusarium lechenicolum C. Massal. in litt.)

TILLETIA IN THE CAPSULE OF BRYOPHYTES is the title of a note by Bradley M. Davis, Botanical Gazette, 36:306-7, Oct. 1903. He calls attention to the fact that the capsules of certain mosses and liverworts are sometimes attacked by fungous parasites that fill these structures with a mass of mycelium, which develops small spores as in the Ustilaginales. In 1892 Nawaschin described such an organism under the name Tilletia (?) sphagni. The author refers to Sydow's recent Tilletia (?) abscondita, in the sporophyte of Anthoceros dichotomus, and says that "Botanists are probably not aware that the liverwort, Ricciocarpus natans, harbors a parasite which appears to be similar to this Tilletia (?) described in the other bryophytes."

JOURNAL OF MYCOLOGY

A Periodical Devoted to North American Mycology. Issued in February, May, October and December. Price, $1.00 per Year. To Foreign Subscribers $1.10. Edited and Published by

W. A. KELLERMAN, PH. D., COLUMBUS, OHIO.

NOTES.

I can not sufficiently thank the mycologists and other botanists, both professional and amateur, for the cordial support given to the Journal of Mycology. This has come to me in the form of unsolicited commendations of the work, subscriptions and contributions. Continued support and assistance will be most gratefully appreciated.

One regret only can possibly be expressed in connection with this matter, namely, that the enlargement of the Journal and more frequent issuance, necessitates an increase in the subscription price; but it is hoped that this may, after all, be quite acceptable to all of the estimable subscribers.

The Journal will be issued the coming year (1904) as a bimonthly publication; otherwise it will retain the general character exhibited in past numbers. The price will accordingly be two dollars ($2.00) a year.

It is most unfortunate that Vols. I-VII, inclusive, are entirely exhausted; it is very seldom that second hand copies can be obtained. When available the price is naturally very high.

Therefore the proposition is made (formerly referred to in these pages) to issue a SUMMARY VOLUME of the first seven volumes — the same to contain an exact reprint of all the *original descriptions of fungi* therein contained, and an abstract of the other articles, all with full citation. Will those wishing such a volume — price $2.00—kindly notify me at once? If a fair number of orders is received the volume will be issued perhaps in December.

Volumes 8 and 9 (for 1902 and 1903) will hereafter be sold for $2.00 each, as long as the supply lasts. Earlier volumes can not be furnished; the supply of reprints of some of the articles in those volumes as advertised on page 48 (Vol. 8) is now practically exhausted.

The Reprints of Index to North American Mycology, printed on thin paper on *one side of page only* can be furnished to regular subscribers for the same. The price is 25 cents per copy, payable in advance if desired, or bill will be rendered whenever four Numbers are issued; about three or four will appear annually.

Journal of Mycology Portraits with Facsimile Autographs.

Journal of Mycology

VOLUME 9—DECEMBER 1903

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A NEW SPECIES OF BERLESIELLA.

A. P. MORGAN.

BERLESIELLA HISPIDA Morgan sp. nov.

I. Botryodiplodia. Stromata cortical, erumpent, elongated, black; perithecia numerous, compact, prominent, rough, black. Sporules obovoid-oblong, at first simple and hyaline, at length brown and 1-septate, 25-30 x 14-17 mic.

II. Berlesiella. Stroma thin, cortical, erumpent, black, the perithecia seated upon it and cæspitose or more or less effused. Perithecia large, black, subglobose, simply perforate, hispid with slender, septate, black hairs; asci cylindric, with a short stalk, 150-25 x 18-22 mic., the paraphyses very slender; spores elliptic-oblong, at first hyaline, at length yellow-brown, transversely 4-7-septate, with a few longitudinal septa, usually constricted in the middle, 25-35 x 10-14 mic.

Growing on the bark of Aesculus glabra, Preston, O., January, 1897. The perithecia crowded together on the circular or much elongated stroma, which grows in the bark beneath the epidermis, bursting or splitting it at an early stage of its growth.

The most obvious mark of the genus Berlesiella appears to be its setulose perithecia; the color of the spores is not different from that in some species of Cucurbitaria.

A NEW METHOD OF MOUNTING SUPERFICIAL FUNGI.

HERBERT H. WHETZEL.

In Studying Sphæropsis malorum on apple leaves, I found that in its early stages, before pycnidia were formed, well defined brown spots appeared. Although I examined many sections from these brown spots, I failed to discover any mycelium. Material scraped from the surface showed nothing of the mycelial character of the fungus. I had about decided that the spots were not due to a fungus when I found a few immature pycnidia on one of the spots. It then occurred to me to cook a piece of the leaf in a weak solution of Potassium hydrate (KOH) and by macerating the leaf tissues thus to discover the mycelium. I had successfully used this method in studying mycelium distribution in the galls of Gymnosporangium macropus. After slowly cooking the leaves for half an hour, I found that the brown coloring of the leaves was bleached out. The epidermis separated as a thin sheet from the other tissues of the leaf. After washing thoroughly in clear water, I examined it under the microscope and found, that, while the leaf tissue was entirely bleached, the brown threads of the fungus still retained their color and showed beautifully.

The same method used on several other fungi growing superficially on leaves, stems and fruits has given in every case excellent results. This method has never before been used, so far as I know, and believing that other persons may find it helpful, I give it in detail as I have worked it out.

1. Carefully peel or slice off a piece of the epidermis on which the fungus is growing. Care should be exercised to take away as little subepidermal tissue as possible.

2. Immerse the slice in a 2-4% solution of Potassium hydrate and boil in an evaporating dish over a low flame for 20-30 min. Cook long enough to remove all the color from the tissue of the host.

3. Pour off the Potassium hydrate solution and wash by letting the material stand for 10-20 min. in each of two or three changes of clear water, stirring it about occasionally. If all the color is not removed from the host tissue cook again. Carefully pick away any pieces of subepidermal tissue that may cling to the epidermis.

4. Dehydrate in 95% alcohol.

5. Clear in carbol clearer (2 parts pure carbolic acid and 3 parts turpentine.)

6. Mount in Canada balsam.

The Advantages of this method may be summed up as follows:

1. The mycelium, pycnidia, etc., are preserved in their natural form and position on the surface of the host, and not all broken and disarranged as is the case when they are scraped from the surface.

2. In many cases of the forms the mycelium is so scanty that in an ordinary mount or section too little is present to show its nature, while by this method a large area is presented so that all the mycelium is sure to be present.

3. Pycnidia in all stages of development may be easily obtained and studied in their normal position and relation to the mycelium on which they are borne.

4. In order that the spores may be shown, a pycnidium at the side of the mount may be crushed with a dry scalpel while the material is still in the clearer.

5. By removing the color of the host cells there is nothing to interfere with the examination of the mycelium by transmitted light.

This method will be found most valuable in the case of those fungi having dark colored mycelium. Hyaline mycelium would be scarcely more evident than the colorless host cells. The whole secret of the process lies in the fact that the pigment in most of the higher plants (the hosts) is bleached by Potassium hydrate, while that of the parasite is not affected.

Very excellent results have been obtained in the case of the following fungi: Cladosporium carpophilum on the bark of peach twigs, Leptothyrium pomi on the fruit of cultivated apples, Vermicularia circinans on the outer leaves of onion bulbs, Sphæropsis malorum on leaves of cultivated apples, Macrosporium cucumerinum on leaves of Cucumis melo.

Botanical Department, Cornell University.

THE FINDING OF PUCCINIA PHRAGMITIS (SCHUM.) KORN. IN NEBRASKA.

BY JOHN M. BATES.

On June 14th, 1901, while collecting asparagus rust in a garden in Kearney, Nebr., I found six or seven spots of pure white æcidia on Rheum raphonticum on the under side of the leaves. It was at once pronounced to be Puccinia phragmitis, and appeared to be on a new host for this country. This suggested further study of the species. This garden is three miles from the Platte River, and probably there is no patch of Phragmites phragmites nearer than this. About a mile west of Callaway, Custer County, there are several patches of this grass, and on this I found rust on the 28th of August of last year. The Uredo stage was just passing away at that date. This brought

up the question of where the æcidial stage might be found. Learning that Dr. Arthur had made cultures of æcidia on a Rumex from the teleutospores of Phragmites rust, it occurred to me that Rumex britannica which grows abundantly in these marshes must be the host plant. On April 9th I visited one of the patches of Phragmites and collected leaves for a culture. In my back yard is a large crown of Rumex altissimus, and over this I laid several rusted leaves of the Phragmites, putting a stone on one end and allowing the other to flop in the wind. On May 28th I found the Dock leaves heavily infected, some of the lower leaves having white æcidia ready for collection. This suggested a visit to the marsh containing Rumex britannica. Here I waded into the marsh and was rewarded by finding æcidia in abundance, but still a little immature. Specimens were collected for distribution.

I next began inspecting my neighbors' gardens and found good æcidia on Rheum rhaponticum in four gardens, two near my home, one three-quarters of a mile east, and the other four miles distant westward. I concluded from this that the spores had not come from my experiment, but were generally distributed by the wind.

A week later I collected another set of æcidia from Rumex britannica in the marsh, finding the spots lessening in number as the distance from the grass increased, and none at all a few hundred feet away.

On June 9th I found an æcidium in small quantity on Rumex altissimus by the creek bank, three blocks south of my home, and one good spot of it on Rumex crispus.

We have therefore, in twelve months, found the æcidia on four hosts in the Dock Family, namely; Rheum rhaponticum, Rumex altissimus, Rumex britannica, and Rumex crispus. The uredo and teleutospore stages are common on the Reed Grass—Phragmites phragmites. As this grass as well as Rumex britannica are common through the northern states it is probable that the rust may be found here and there if carefully searched for.

Red Cloud, Nebraska.

POISONING BY LEPIOTA MORGANI PK.

F. L. STEVENS.

The genus *Lepiota* according to Engler and Prantl, following Saccardo, contains some 270 species, about thirty of which are native to America, 18 being found in New York alone. It belongs to the white spored series of the *Agaricaceae* and is distinguished from the other members of this series by the absence of a volva, presence of an annulus, which is often moveable, and

by its free lamellæ. The fleshy pileus is usually scaly in this genus. The stalk is firm.

While this genus, in classification, falls somewhat near the deadly Amanitas, its members are usually considered wholesome, and several of them certainly are so.

The one species in question, *Lepiota Morgani* Pk., is a large attractive form which with its abundance of clean, firm flesh is especially tempting. This species may be distinguished by its greenish spores. By some it is regarded as edible, while by others it is viewed with suspicion.

The personal experience of the writer with this fungus, with an accurate account of symptoms written from notes made on the day of the experiment may be worthy of record in view of the somewhat indefinite position that the species occupies in the minds of mycophagists.

About three cubic centimeters of the pileus in fresh condition were eaten raw on August 21st at 12:45 P. M. The taste was mild and pleasant with no specially marked characteristics. At one o'clock I ate a full dinner, consisting of no unusual foods, and after dinner worked a bit in the hot sun from 1:30 to 2:30. In the meantime symptoms of slight dizziness gradually developed. The dizziness was so slight that it is perhaps proper to call it a lack of clearness, haziness or fogginess of the brain rather than real dizziness. This, at the time, was attributed to the intense heat of the afternoon. From 2:45 to 3 o'clock very slight gastric uneasiness, not nausea, merely disquiet, accompanied by slight tension of the muscles of the jaw, throat, and mouth was noticeable. At three o'clock, occurred, without an instant's warning sudden violent vomiting. This was painless and without nausea. The stomach's content was sour. This attack was immediately preceded by a few moments marked by cold sweat. The attack was repeated at 3:30, at 4 and at 4:40. Frequent sneezing, occasional slight chills and the foggy head occurred throughout this time. The symptoms were decidedly aggravated just prior to each attack of vomiting. The strength remained practically normal.

The writer travelled from Raleigh to Goldsboro in the interval between 3:30 and 6 P. M., drinking copious supplies of water as a stomach wash after 4 P. M. About 4:30 diarrhœa began. There was full control of the rectal muscles but the discharge was extremely watery. The last vomiting occurred at 4:40. The diarrhoea continued until six or eight o'clock. Slight pain in the region of the stomach and intestine was felt from 4:30 to 5:40. Mucus was abundant in the throat, coming probably from the stomach. After five o'clock there was rapid recovery to the normal. I ate a moderately large supper at 8 P. M., slept well and awoke in normal health next morning. All of the symptoms excepting the severe vomiting and diarrhœa

were mild. Health prior to the dinner was perfectly normal. The dinner was a usual one, partaken of by several other people, none of whom had any such symptoms.

There is no doubt of the identity of the species of which I had an abundant quantity for examination. One specimen with field notes was submitted to Mr. F. S. Earle, who also kindly determined the species for me. He says, "The plant seems to be a small form of *Lepiota Morgani* Pk."

The violence of the attack, its absolute coincidence with the ingestion of the fungus, its subsidence with the final rejection of the fungus, the subsequent and antecedent history of the subject, and the peculiar characteristic symptoms of intoxication, both in the digestive and nervous systems, all indicate clearly the poisonous nature of this species.

The specimens eaten were in perfectly fresh normal condition, picked in grass under trees. The extreme violence of the symptoms produced by such a small quantity of the fungus, makes one wonder what a meal from such might do.

While some claim to have eaten this species with impunity, and are inclined to regard the pain as resting with an idiosyncrasy of the subject, it is evident that one should determine his own personal resistance with considerable caution.

NEW SPECIES OF FUNGI.

J. B. ELLIS AND B. M. EVERHART.

The first two species given in the list were collected in California by Copeland and sent by C. F. Baker. The remainder were collected in the vicinity of London, Canada, by Professor J. Dearness.

RAMULARIA GLAUCA E. & E.—On leaves of Sambucus glauca, near Stanford University, California, Aug. 1903, (leg. Copeland Comm. C. F. Baker, 3738).

Spots amphigenous, dark-brown, ½-1 cm. diam. with a slightly raised border, orbicular or irregular outline. Hyphæ obsolete, the conidia arising directly from a tubercular base and forming a tuft about 75 μ diam. The conidia are hyaline, mostly continuous, oblong-fusoid, subcatenulate, 15-30 x 3-4 μ, about the same as those of R. sambucina Sacc. which differs in its small white spots.

SEPTORIA CHRYSAMPHORÆ E. & E.—On Chrysamphora californica, Mt. Eddy, California, Sept. 1903, (leg. Copeland, Comm. C. F. Baker, 3749).

Spots at first small (1-2 mm.), of a pale golden color, with a purplish areolate border, finally larger (1 cm.) and the purplish areola less distinct and narrower. Perithecia scattered on the

spots, sub-prominent, broadly perforated above, 100-125 μ diam. Sporules narrow-clavate, 30-50 x 2½ μ, continuous, hyaline, gradually narrowed from the apex down.

CALOSPORA ALLANTOSPORA E. & E.—On dead limbs of Cornus alternifolia, and on Maple, Acer saccharinum, London, Canada, Oct. 1903 (Prof. J. Dearness, 2010).

Perithecia scattered, buried in the bark and penetrating to the wood, depressed-globose, ½ mm. diam., brown, not polished, walls carbonaceo-coriaceous; ostiolum conic- or short-cylindrical, erumpent, rupturing the bark. Asci clavate, p. sp. 45-55 x 7-9 μ. Paraphyses 50-90 μ long. Sporidia biseriate, cylindrical, curved, hyaline, obtuse, very faintly 3-septate, 15-20x2½-3 μ, not constricted at the septa which are so faint as to be easily overlooked.

In the specimens on Maple the sporidia are smaller than in the specimens on Cornus.

The ostiolum arises through a flat black disc visible through the ruptured epidermis, as in Clypeosphæria, and is easily broken off.

THYRIDIUM STILBOSTOMUM E. & E.—On dead Maple limb partly decorticated. London, Canada, Oct. 1903. (Dearness 3001).

Perithecia globose, ⅛-½ mm. diam., buried in the wood or bark, white inside. Ostiolum depressed-hemispherical, black and shining, pierced in the center with a minute opening. Asci cylindrical, stipitate, paraphysate, p. sp. 75-80 x 8-10 μ. Sporidia uniseriate, elliptical, brown, 6-7-septate and sparingly muriform, more or less constricted at the middle septum, 22-27 x 7-10 μ.

The perithecia are scattered or 3-5 in a genuine stroma, and those on the decorticated wood are smaller but all have the same sporidia.

DIAPORTHE CARYIGENA E. & E.—On dead Hickory limbs, London, Canada, Oct. 1903. (Dearness, 2863).

Perithecia lying 3-6 together in the inner bark but not penetrating the wood, globose, small (½ mm.), each group surrounded by a black, circumscribing line which penetrates the wood for ½-1 mm. and when the limb is split appears like a section of a shallow cup, the included wood being of a much lighter color. Ostiola fasciculate, raising the epidermis into pustules and finally piercing but not laciniately rupturing it or rising above it, tips of ostiola smooth, papilliform. Asci subcylindrical, p. sp., about 60 x 10 μ. Sporidia mostly uniseriate, elliptical, uniseptate, ends rounded and obtuse, constricted, each cell with a large transparent nucleus, 9-13 x 3½-4½ μ.

D. eusticha E. & E., D. woolworthii Pk., D. apocrypta C. & E. have no circumscribing line and D. corymbosa C. & E. to which it comes nearest, has larger sporidia.

DIAPORTHE MICROSTROMA E. & E.—On Maple bark, London, Canada, Sept. 1903. (Dearness, 2986).

Stroma small (½ mm.), round, surrounded by a black, circumscribing line which penetrates the bark down to the surface of the wood, paler inside than the surrounding bark. Perithecia 1-4 (mostly 1-2) in a stroma, small (about ¼ mm.), with short, conic-papilliform ostiola, joined in a small black disc and slightly raising the bark but not exserted. Asci clavate-oblong, 80-100 x 15-20 μ, surrounded by abundant but evanescent paraphyses. Sporidia biseriate, at first fusoid and acutely pointed, when mature broader and more obtuse, uniseptate and constricted, 22-30 x 10-13 μ.

Differs from D. ontariensis E. & E. in its larger sporidia and the black circumscribing line not penetrating the wood. Prof. Peck who has examined these specimens says his D. robusta has larger pustules and smaller sporidia.

DIAPORTHE CATALPÆ E. & E.—On dead limbs of Catalpa, London, Canada, Oct. 1903. (Dearness, 2021).

Perithecia scattered or oftener 2-4 together, ½-¾ mm. diam., about half sunk in the wood which is blackened on the surface and deeply penetrated by a black circumscribing line including a space of one or more centimeters in extent; ostiola subglobose, erumpent through an acutely elliptical black disc. Asci clavate-oblong, 40-50 x 6-7 μ. Sporidia subbiseriate, fusoid-oblong, 4-nucleate, 10-12 x 2½-3 μ.

PSEUDOVALSA CANADENSIS E. & E.—On dead limbs of Hawthorn (Crataegus), London, Canada, Oct. 1903. (Dearness, 2993).

Perithecia ½-¾ mm. in diam., buried in the unchanged substance of the wood, either scattered singly or in groups of 3-4, their obtuse, papilliform ostiola converging and raising the bark into pustules but scarcely exserted; walls of the perithecia subcoriaceous, thick, soon black and shining inside. Asci 150-250 x 8-10 μ, cylindrical, rounded at the summit, surrounded by abundant, filiform, guttulate, hyaline paraphyses. Sporidia cylindrical, obtusely pointed at the ends, yellowish-brown, 23-30 x 7-8 μ, 7-10-septate.

The inner surface of the bark is more or less blackened.

PSEUDOVALSA MINIMA E. & E.—On Maple bark, London, Canada, Nov. 1903. (Dearness, 2047).

Stroma orbicular or elliptical, small, (1-2 mm.), limited, cortical, formed from the substance of the bark which is blackened in the upper part of the stroma but is lighter than the surrounding bark below. Perithecia sunk in the bottom of the stroma, not penetrating the wood, 2-6 in a stroma, globose or ovate, 400 μ diam. with rather thick, coriaceous walls. Ostiola subconical, erumpent in a small black disc, but scarcely exserted. Asci cylin-

drical, 100-120 x 7 μ. Sporidia uniseriate, oblong elliptical, 3-septate, scarcely constricted, olive-brown, 12-15 x 3½ μ. The ostiola raise the bark into little pustules which are not very conspicuous.

This comes near P. comptoniæ E. & E.

DIATRYPELLA XANTHOSTROMA E. & E.—On dead limbs of Pirus japonica, London, Canada, Nov. 1903. (Dearness, 2045).

Stroma tubercular-erumpent, 2-4 mm. diam. rather flattened on top and bearing adherent fragments of the ruptured epidermis, black outside, yellow within (the same shade of yellow seen in Hypoxylon sassafras Sz.) Perithecia 4-10 in a stroma, globose or slightly flattened laterally, subfarinaceous outside, about ½ mm. diam., abruptly contracted above into short necks with variable ostiola, papilliform, conical, or obscure, finally rather broadly perforate above. Asci clavate-oblong, 55-65 x 8-10 μ, polysporous. Sporidia allantoid, yellowish-hyaline, slightly curved, 9-10 (exceptionally 9-12 x 2 μ.

This comes near D. frostii Pk. but the sporidia are longer and the yellow color of the stroma inside is different.

UREDINEOUS INFECTION EXPERIMENTS IN 1903.[1]

W. A. KELLERMAN.

Artificial infection experiments with certain species of Puccinia and Uromyces, continuation of those published one year ago, are here reported for the current season, beginning March 5th and ending June 18, 1903. Attention is called to the preceding report where explanations are made relative to the plan and execution of the work — substantially the same being followed during the season now under consideration.

It may be mentioned that pre-season experimentation, or at least very early inoculations, proved very advantageous again, as in the preceding year. For example, in case of the demonstrated connection between Puccinia muhlenbergiæ Arth. & Holw. and Aecidium hibisciatum Schw., quite unexpected, repetition of the inoculation three times was possible, the last time with the host plants growing in their natural habitat. Had this not been possible judgment would perhaps have been held in suspense, but under the circumstances a positive conclusion was not deferred to another year.

Advantageous and desirable as it is to carry on germination tests before making the inoculations, I can not think it objection-

[1] Contributions from the Botanical Laboratory of the Ohio State University. XV.

Presented before the Botanical Society of America, at St. Louis, December, 1903.

able in any case to use material untested or that has proven refractory under trial — and I do not speak wholly without experience in regard to this matter. The artificial conditions that must in all cases obtain, can reasonably be supposed responsible for occasional negative results. In case the spores sown actually infect the host, nothing was gained by the labor and loss of time in the pre-germination tests. These suggestions make it desirable that I insist on the slight stress that should be placed on negative results; they should never be taken as necessarily conclusive. When we reflect on the very many possible causes of failure in connection with any artificial infection no valid objection, in my opinion, can be urged against the view presented. On the other hand a positive result under properly imposed conditions and crucial exactions settles the question at once — though repetition only would satisfy very skeptical minds.

Relative to the experiments outlined below, I may say that twenty-two species of Rusts were used, and in case of nine of them inoculations were successful. This is about the same ratio between success and failure as obtained in the work of the previous season. In a few cases the failure was a foregone conclusion, due to poor "seed" or unsatisfactory host plants; still in spite of the narrow or negative chances of success inoculations were attempted. An unusually large number of tests were made with the Sunflower rust. Nineteen species of Helianthus were used and Rust from four species applied — though unfortunately with very meager results, it must be confessed — and in some other cases an unusually large number of host plants were used; it therefore happened that the total number of inoculations, Nos. 68-260, was relatively quite large, namely 193. Turning now to the details of the experiments, recording briefly the facts in each case and commenting as seems necessary the report is as follows:

PUCCINIA ANGUSTATA Pk. from SCIRPUS ATROVIRENS Muhl.

With material collected at Sandusky, Ohio, in April 1903, repeating the culture of this species — the connection of which with Aecidium lycopi Ger. was originally determined by Dr. Arthur, a single experiment as given below was undertaken. The teleutospores sown on Lycopus americanus produced the aecidia in abundance, thus corroborating Dr. Arthur's work, and obviating the necessity of further explanation here. The record of the experiment is as follows:

Exp. 180. May 28. Teleutospores from Scirpus atrovirens Muhl. applied to Lycopus americanus Muhl. *June 6, spermogonia abundant; June 10, aecidia abundant.*

PUCCINIA CAULICOLA Tr. & Gall. from SALVIA LANCEOLATA Muhl.

Teleutosporic material of this species was kindly sent me by Mr. E. Bartholomew in April 1903 from Rockport, Rooks Co., Kansas. Cultures were made on seedling plants of Salvia lanceolata Muhl. grown in the greenhouse — the seed also furnished by Mr. Bartholomew. Some adventive plants of this western species had previously been found by a roadside in the suburbs of Columbus, Ohio, and they also furnished opportunity for attempted inoculations with the species under consideration. Infections were obtained in case of the seedling plants in the greenhouse — the aecidia appearing in due time though by no means abundant. Re-inoculation at a later date, with teleutospores from same source, was also successful.

This demonstrates the existence of an aecidial stage for this species — not before reported — and establishes the connection of teleutospores and aecidia on the same host. Mr. Bartholomew searched for aecidia in Kansas but found only uredo and teleutospores on the indigenous Salvia lanceolata. Attempted inoculation of the adventive plants at Columbus, Ohio, done under very unfavorable conditions, were not successful.

No spermogonia were seen. A satisfactory diagnosis of the aecidia can not be given from the scant material obtained — about a dozen sori — but the following may be offered:

AECIDIUM CAULICOLUM.— Sori mostly epiphyllous, few, scattered, forming sordid-yellowish spots and which are inconspicuous on the under side of the leaf, less than 0.5 to 1 mm. or more in diameter, circular in outline. On one leaf occurred besides several epiphyllous sori, also a single hypophyllous linear sorus, about 6 mm. long, following a prominent vein near the base of the lamina which it distorted to semicircular outline. Aecidia sometimes limited to one or very few in a sorus, sometimes 10 or 12 (over two dozen in the single linear sorus above described), 210-350 μ diameter, when ruptured the edge somewhat regularly lacerate but scarcely recurved. Peridial cells very large. Aecidiospores pale golden yellow, echinulate, globular to oblong or sub-ovate, 10-25 x 17-20 μ ; pores not seen.

Exp. 181. May 28. Teleutospores of Puccinia caulicola Tr. & Gall. applied to seedling plants of Salvia lanceolata Willd. *June 9, scattered amphigenous aecidia.*
Exp. 242. June 17. Same to Salvia lanceolata Willd. *Aecidia noticed July 11,* (perhaps appeared earlier).
Exp. 243. June 17. Same to Urtica gracilis Ait. *No infection.*
Exp. 244. June 17. Same to Monarda fistulosa L. *No infection.*
Exp. 245. June 17. Same to Salvia lanceolata Willd., adventive plants on Greenlawn Ave., Columbus, Ohio. *No infection detected.*

PUCCINIA CARICIS-ERIGERONTIS Arth. from CAREX FESTUCACEA Willd.

I am indebted to Dr. Arthur for culture material for this species, collected in Indiana, April 14, 1903. The experiment besides, was merely a repetition of his own, and proved to be a corroboration of the result formerly published. Abundant aecidia appeared on the Erigeron (Leptilon) but no infection resulted when teleutospores were applied to other hosts as the following record shows.

Exp. 186. May 29. Teleutospores from Carex festucacea Willd., applied to Erigeron pulchellus Mx. (Erigeron bellidifolius Muhl.) *No infection.*
Exp. 187. May 29. Same to Leptilon canadense (L.) Britt. (Erigeron canadense L.). *Abundant spermogonia June 6, and aecidia June 10.*
Exp. 188. May 29. Same to Rudbeckia speciosa Wenderoth. *No infection.*
Exp. 197. May 29. Duplicate of 186. *No infection.*
Exp. 198. May 29. Duplicate of 187. *Infection same as in 187.*

PUCCINIA CARICIS-SOLIDAGINIS Arth. from CAREX STIPATA Muhl.

Abundant Rust for cultures was collected at Buckeye Lake, Ohio, November 1, 1902, and kept in cloth sacks exposed all winter (hanging in a Norway Spruce tree). This was used April 25 on eight different hosts, none but Solidago canadensis becoming infected. It will be noticed from the record below that Solidago riddelii did not seem to be susceptible. Dr. Arthur used Solidago canadensis L., S. serotina Ait., S. caesia L., S. ulmifolia Muhl. and S. rigida L. with success, as given in his report of cultures in Botanical Gazette, January, 1903.

Exp. 151. April 25. Teleutospores from Carex stipata Muhl., applied to Hibiscus moscheutos L. *No infection.*
Exp. 152. April 25. Same to Solidago canadensis L. *Spermogonia appeared May 3, and aecidia May 6.*
Exp. 153. April 25. Same to Solidago riddellii Fr. *No infection.*
Exp. 154. April 25. Same to Verbesina alternifolia (L.) Britt. (Actinomeris squarrosus Nutt.) *No infection.*
Exp. 155. April 25. Same to Erigeron annuus (L). Pers. *No infection.*
Exp. 156. April 25. Same to Carduus altissimus L. *No infection.*
Exp. 157. April 25. Same to Ambrosia trifida L. *No infection.*
Exp. 158. April 25. Same to Rudbeckia speciosa Wenderoth. *No infection.*

PUCCINIA CIRSII-LANCEOLATI Schroet. from CARDUUS LANCEOLATUS L.

This species was described by J. Schroeter, in Kryptogamen-Flora von Schlesien, 317, 1889, (pp. 257-384 published 27 August 1887), aecidia, uredo and teleutospores being included. The Rust on the same host in this country has usually been listed as Puccinia cirsii Lasch by American authors, since the aecidial stage was not in evidence. Having suitable material for culture experiments, work was begun with a view of searching especially for aecidia, March 20th, using as host plants the same species which furnished the teleutospores, namely, Carduus lanceolatus, and many other Compositæ as indicated in the record below. No infections resulted except on Carduus lanceolatus. What at the time were somewhat doubtfully supposed to be spermogonia, are recorded in my notes, but I could not later verify the accuracy of the same; their occurrence is therefore not demonstrated and improbable. But a fair number of the peculiar aecidial sori appeared in due time on two or three leaves of the host plant. Later, uredo and teleutospores followed. Repetitions were not successful — but may have been owing to lateness of season when work was carried on.

When inoculations were instituted specimens were sent to European authority, and the supposition that our material should be called Puccinia cirsii-lanceolati was approved; specimens of European material showing the aecidial stage are now at our service for comparison. The testimony is clear that we have to do with a Eu-Puccinia; it is autœcious. To avoid the necessity of using a 'round about' mode of expression when referring to the aecidial stage it is proposed to use the terminology as follows: *Aecidium cirsii-lanceolati.* Unfortunately Schroeter's description is so meager as the following for the aecidia: "Aecidien in kleinen Gruppen zusammengestellt. Pseudoperidien sehr locker gefügt, weit becherförmig. Sporen elliptisch mit farbloser, feinwarziger Membran und hell orange-rothem Inhalt." Our material accords in the main with the above — but it is being subjected to more careful study and the results, including a fuller description, will be published later. Dates of cultures, etc., are as follows:

Exp. 77. March 20. Teleutospores from Carduus lanceolatus L. applied to Carduus lanceolatus L. *Spermogonia (?) on two plants appeared March 28; aecidia developed April 3; uredo and teleutospores in considerable abundance were observed some time thereafter.* (Record for Spermogonia is now considered incorrect.)

Exp. 78. March 20. Same to Lactuca virosa L. *No infection.*

Exp. 79. March 20. Same to Taraxacum erythrospermum Andrz. *No infection.*

Exp. 80. March 20. Same to Erigeron annuus (L.) Pers. *No infection.*
Exp. 83. March 29. Same applied to Carduus lanceolatus L. *No infection.*
Exp. 84. March 29. Same to Chrysanthemum indicum Hort. *No infection.*
Exp. 85. March 29. Same to Taraxacum erythrospermum Andrz. *No infection.*
Evp. 86. March 29. Same to Erigeron annuus (L.) Pers. *No infection.*
Exp. 87. March 29. Same to Lactuca virosa L. *No infection.*
Exp. 119. April 11. Same to Carduus lanceolatus L. *No infection.*
Exp. 120. April 11. Same to Carduus altissimus L. *No infection.*
Exp. 159. May 5. Same to Carduus lanceolatus L. *No infection.*
Exp. 160. May 5. Same to Carduus altissimus L. *No infection.*
Exp. 99. March 30. Aecidiospores from Puccinia cirsii-lanceolati Schroet., applied to Carduus lanceolatus L. *No infection.*

PUCCINIA HELIANTHI Schw. from HELIANTHUS AMBIGUUS (E. & G.) Britt., H. ANNUUS L., H. DECAPETALUS L. and H. MOLLIS Lam.

This species has proven more or less refractory in the hands of recent experimenters. In Europe Woronin, as long ago as 1872 published interesting inoculation experiments, in the Botanische Zeitung No. 38 & 39, 30 Jahrgang, (Sept. 20 & 27), (Aus dem russischen Originale auszüglich mitgetheilt), which he executed at St. Petersburg, Russia, the cultivated Helianthus annuus L. in that country being an important farm crop. His main purpose was to determine whether this prevalent and very damaging species of Rust was the same as that occurring on other Compositæ of that region, and which he rightly decided in the negative. His cultures also were designed to show whether the Rust on "Erdbirne," Helianthus tuberosus, (Puccinia helianthorum Schw.) was the same as the "Sonnenblume" Rust (P. helianthi Schw.). He states that his experiments led him to the conclusion that the two are entirely different, an opinion also shared by de Bary based on his own cultures.

This matter was taken up recently by Ernst Jacky, who reports his results in the Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankh. 2 Abt. 9:802, 6 Dec. 1902. He shows that Puccinia helianthi is an aut-eu-puccinia — the pycnidia, æcidia, uredo and teleutospores produced by sowings of teleutospores from Helianthus annuus, on H. annuus, H. cucumerifolius, and H. californicus, but the species not able to live on H. tuberosus, H. maximiliani, H. multiflorus, H. scaberrimus, and H. rigidus.

In this country Carleton reported work with this Rust, in Science N. S. 13:250, 15 February 1901. His words are as fol-

lows: "Culture experiments were also performed with the common Sunflower Rust, which showed that the Puccinia and Aecidium found on Sunflower are stages of one and the same species. At the same time it is made probable that all the species of Helianthus affected bear the same Rust and that there is no distinction of host forms."

Dr. Arthur sowed teleutospores from Helianthus grosse-serratus Mart. on the same host and on H. maximiliani Schrad.; cultures successful. He adds that sowings at two different dates on H. strumosus gave no infection.

Such facts on record induced me to make as large number of cultures as possible, hoping to furnish worthy testimony in the case. But my success was slight, my failure was great. I used teleutospores from three species of Helianthus as stated above. Inoculations were attempted on nineteen species as hosts, namely, H. annuus, atrorubens, decapetalus, divaricatus, doronicoides, gigantea, grosse-serratus, hirsutus, kellermani, laetiflorus, longifolius, maximiliani, mollis, multiflorus, orgyalis, strumosus, subtuberosus, tracheliifolius, and tuberosus.

I am sorry to record that the only successful inoculations were those with teleutospores of Helianthus mollis Lam. on H. annuus and H. mollis. A few inoculated leaves of each of these two species produced a small number of aecidia. Repetitions with this and other inoculating material were unsuccessful — and the reason for such failure is not clear. The material in case of H. annuus was unfortunately quite small in quantity and at the time not considered satisfactory. That from H. decapetalus and H. ambiguus was abundant but the quality was suspected. But that from H. mollis was apparently in good condition. It had been exposed in the natural habitat all winter, and collected April 2, near Sandusky, Ohio. In spite of the above I do not at all think the negative results of great significance. Of course this Rust on H. mollis will grow on H. annuus, but I do not suppose it will necessarily fail to grow on others — in fact I fully believe at the hands of other experimenters or under other conditions more abundant success will be vouchsafed. It may be well briefly to record the data of the experiments.

Expts. 100-114. April 5. Teleutospores from Helianthus mollis Lam., applied to Helianthus mollis Lam., annuus L., giganteus L., laetiflorus Pers., hirsutus Raf., tuberosus L., orgyalis DC., divaricatus L., mollis Lam., tracheliifolius Mill., strumosus L., atrorubens L., kellermani Britt., and grosse-serratus Mart. *Spermogonia appeared on H. annuus L. (Exp. 101) April 18, and aecidia April 24; ditto H. mollis Lam. (Exp.* 109).

Expts. 170-179. May 24. Same to Helianthus mollis Lam., laetiflorus Pers., maximiliani Schrad., orgyalis DC., kellermani Britt., hirsutus Raf., tuberosus L., giganteus L., subtuberosus Bourg., longifolius Ph. *No infection.*

Expts. 247-254. June 18. Teleutospores of Helianthus mollis from Indiana (sent by Dr. Arthur), applied to Helianthus longifolius Ph., orgyalis DC., mollis Lam., hirsutus Raf., gigantea subtomentosa, laetiflorus Pers., maximiliana Schrad., and atrorubens L. *No infection.*

Expts. 121-137. April 19. Teleutospores from Helianthus annuus applied to Helianthus annuus L., doronicoides Lam., mollis Lam., laetiflorus Pers., hirsutus, Raf., maximiliani Schrad., longifolius Ph., grosse-serratus Mart., laetiflorus Pers., kellermani Britt., giganteus L., subtuberosus Bourg., tracheliifolius Mill., strumosus L., tuberosus L., decapetalus L., multiflorus L. *No infection.*

Expts. 255-260. June 18. Same to Helianthus atrorubens L., hirsutus Raf., mollis Lam., orgyalis DC., subtuberosus Bourg., and Nabalus alba (L.) Hook. (Prenanthes alba L.). *No infection.*

Expts. 69-76. March 5. Teleutospores from Helianthus decapetalus L., applied to decapetalus L., giganteus L., mollis Lam. atrorubens L., kellermani Britt., laetiflorus Pers., orgyalis DC., annuus L. *No infection.*

Expts. 88-98. March 29. Applied teleutospores from Helianthus ambiguus (T. & G.) Britt. to Helianthus annuus L., giganteus L., gigantea subtomentosa, hirsutus Raf., strumosus L., orgyalis DC., laetiflorus Pers., tuberosus L., grosse-serratus Mart., mollis Lam., kellermani Britt. *No infection.*

PUCCINIA HIBISCIATA (Schw.) Kellerm. from MUHLENBERGIA MEXICANA (L.) Trin., M. DIFFUSA Willd., and M. RACEMOSA (Mx.) B. S. P.

The connection established between the teleutosporic stage of this Rust — originally called Puccinia windsoriæ but latterly designated by Arthur and Holway as P. muhlenbergiæ — and the Aecidium hibisciatum Schw. occurring on Hibiscus moscheutos, was published immediately on the conclusion of two sets of satisfactory experiments. See Jour. Mycol. 9:109-110, May 1903. But the report there printed does not cover the entire work with the species in question — dealing as may be recalled only with the Rust from one species only of Muhlenbergia, and with one species only of Hibiscus as the aecidial host.

It is to be added that with similar care and well grounded hopes of success, inoculations were attempted with teleutospores from Muhlenbergia diffusa Willd. This had been collected November 1, 1902, the same day on which the Muhlenbergia mexicana was obtained, and kept exposed all winter in suitable sacks by the side of the latter. Muhlenbergia mexicana was collected on the north shore of Buckeye Lake, Licking Co., Ohio, and M. diffusa was taken a mile distant where (on the south side of the lake) it was common though not abundant.

Aecidium hibisciatum has been for years occurring in great abundance on Hibiscus moscheutos at both of the places just mentioned. No infections were secured, the host plants used

being Hibiscus moscheutos L., H. militaris Cav., and Althaea rosea (Cav.)

Furthermore, Rev. J. M. Bates kindly furnished me from Nebraska, an ample quantity of Muhlenbergia racemosa (Mx.) B.S.P. that harbored the Rust, and the latter was used in an attempted inoculation of Hibiscus moscheutos L., H. militaris Cav., and Napæa dioica L. In no case was an infection secured.

It is not clear how the failures in the above cases should be explained. The apparent conditions were all favorable — though of course no one can pronounce conclusively thereupon. A suggestion may possibly be apropos, namely, that we have here to do with physiological forms restricted to different hosts. The hypothesis signifies nothing however until positive results may be obtained with material from the hosts named. A careful examination by the aid of student J. N. Frank, revealed to us no morphological differences between the spores found on the three species of Muhlenbergia. However the sori on Muhlenbergia mexicana were more numerous — the plants in fact quite blackened with the rust and easily noticed in their natural habitat, at a distance of three or four rods.

Finally it is to be noted that successful inoculations (Exp. 165) were made with teleutospores from Muhlenbergia mexicana on Hibiscus militaris Cav. Attempted infection of several other species of plants of the same and of different orders was not successful. The complete record follows.

Exp. 146. April 24. Teleutospores from Muhlenbergia mexicana (L.) Trin. applied to Hibiscus moscheutos L. *Spermogonia May 5, (abundant May 8); aecidia May 15.*
Exp. 147. April 24. Same to Rudbeckia speciosa Wenderoth. *No infection.*
Exp. 148. April 24. Same to Urtica gracilis Ait. *No infection.*
Exp. 149. April 24. Same to Ambrosia trifida L. *No infection.*
Exp. 150. April 24. Same to Erigeron annuus (L.) Pers. *No infection.*
Exp. 161. May 5. Same to Hibiscus moscheutos L. *Spermogonia abundant May 13, and aecidia later.*
Exp. 162. May 23. Same to Althaea rosea Cav. *No infection.*
Exp. 163. May 23. Same to Malva rotundifolia L. *No infection.*
Exp. 165. May 23. Same to Hibiscus militaris Cav. *Spermogonia June 3, aecidia very abundant* (date lost).
Exp. 222. June 7. Same to Hibiscus moscheutos L. *Aecidia June 16.*
Exp. 223. June 7. Same to Althaea rosea Cav. *No infection.*
Exp. 228. June 8. Same to Abutilon abutilon (L.) Rusby. *No infection.*
Exp. 182. May 28. Teleutospores from Muhlenbergia diffusa Willd. applied to Hibiscus moscheutos L. *No infection.*
Exp. 183. May 28. Same to Althaea rosea Cav. *No infection.*
Exp. 184. May 28. Same to Hibiscus militaris Cav. *No infection.* (Apparently one spermogenial spot — but doubtless to be referred to accidental infection from another experiment.)
Exp. 166. May 24. Teleutospores from Muhlenbergia racemosa (Mx.) B. S. P. applied to Hibiscus moscheutos L. *No infection.*
Exp. 167. May 24. Same to Althaea rosea Cav. *No infection.*
Exp. 168. May 24. Same to Napaea dioica L. *No infection.*
Exp. 169. May 24. Same to Hibiscus militaris Cav. *No infection.*

PUCCINIA LATERIPES Berk. et Rav. from RUELLIA STREPENS L.

A report of the success of cultures of this species has been published on preceding pages (Jour. Mycol. 9:107-9, May 1903), and below are recorded the details of the experiments. It had been assumed perhaps on ample grounds, that this species was autoecious, but heretofore no experiments in artificial infections were on record. It will be found stated in the previous report, and indicated in the record below that what might be termed a 'natural infection' was induced by placing infected soil or humus — old leaves and debris with soil at the base of plants of Ruellia strepens on whose leaves and stems abundant teleutospores were noticed the preceding season — around the host plants in pots in the greenhouse, which were used in the cultures. Besides, infections with teleutospores by the usual method of artificial inoculations was practiced. In a third set of inoculations uredospores (obtained in previous cultures) were used. Pronounced success attended all of the experiments, making a conclusion entirely satisfactory. That the aecidal form of this species has not heretofore been designated by a binomial for convenient reference is unfortunate, and therefore the name here recorded, *Aecidium lateripes,* will obviate future inconvenience. The following is copied from my note book.

Exp. 81. March 5. Soil and humus from base of Ruellia strepens L. known to be infected the preceding year, placed around plants of Ruellia strepens L. in three pots grown in greenhouse since January 30. *Spermogonia appeared* (in case of plants in two pots) *March 23; aecidia developed April 1; later in season very abundant uredospores and teleutospores.*

Exp. 82. April 2. Teleutospores from stems of Ruellia strepens L. exposed all winter but brought into greenhouse March 5, applied to Ruellia strepens L., 3 to 10 inches high. *Aecidia appeared April 10; uredo and teleutospores in abundance in May and June.*

Exp. 115. April 11. Aecidia obtained in Exp. 82 applied to Ruellia strepens L. *Uredo appeared April 25; later a quantity of teleutospores.*

Exp. 138. April 19. Aecidia obtained in Exp. 82, applied to Ruellia strepens L. *Successful* (but date lost).

PUCCINIA SUBNITENS Diet. from DISTICHLIS SPICATA (L.) Greene.

In 1902 Dr. Arthur used material furnished by Rev. J. M. Bates, Nebraska, on Chenopodium album L. and obtained aecidia identified as Aecidium ellisii Tr. & Gall. The same collector also kindly sent me suitable inoculating material on the teleuto-

sporic host named, in March 1903, which was used with success on Chenopodium album L. as the record below shows. Mr. Bates originally suggested a probable connection of the Rust with the Aecidium on Chenepodium leptophyllum (Moq.) Nutt., but as yet no experimental inoculation on this host has been published.

Exp. 220. June 7. Teleutospores applied to Chenopodium album L. *June 21, aecidia abundant.*

The following record of failures, significant perhaps in a few cases, are here set down without further comment.

PUCCINIA CARICINA DC. FROM CAREX COMOSA BOOTT.

Exp. 200. April 5. Teleutospores applied to Urtica gracilis. No infection.

PUCCINIA CARICINA DC. FROM CAREX COSTELLATA BRITT.

Exp. 211. June 6. Teleutospores applied to Urtica gracilis. No infection.
Exp. 211. June 6. Same to Ambrosia trifida L. No infection.
Exp. 213. June 6. Same to Agrimonia parviflora Soland. No infection.
Exp. 214. June 6. Same to Lycopus americanus Muhl. No infection.
Exp. 224. June 7. Same to Xanthoxylum americanum Mill. No infection.

PUCCINIA CARICINA DC. FROM CAREX CRINITA LAM.

Exp. 221. June 7. Teleutospores applied to Leptilon canadense (L.) Britt. No infection.
Exp. 230. June 16. Same to Urtica magellanica Poir. No infection.

PUCCINIA CARICINA DC. FROM CAREX HYSTRICINA MUHL.

Exp. 201. June 6. Teleutospores applied to Urtica gracilis Ait. No infection.
Exp. 202. June 6. Same to Impatiens biflora Walt. No infection.
Exp. 203. June 6. Same to Rudbeckia speciosa Wenderoth. No infection.
Exp. 204. June 6. Same to Eupatorium ageratoides L. f. No infection.

PUCCINIA CARICINA DC. FROM CAREX LANUGINOSA MX.

Exp. 215. June 6. Teleutospores applied to Urtica gracilis Ait. No infection.
Exp. 216. June 6. Teleutospores applied to Solidago flexicaulis L. No infection.
Exp. 217. June 6. Same to Carduus altissimus L. No infection.
Exp. 229. June 8. Same to Leptilon canadense (L.) Britt. No infection.

PUCCINIA CARICINA DC. FROM CAREX LUPULINA MUHL.

Exp. 207. June 6. Teleutospores applied to Urtica gracilis Ait. No infection.
Exp. 208. June 6. Same to Lycopus americanus Muhl. No infection.
Exp. 209. June 6. Same to Cimicifuga recemosa (L.) Nutt. No infection.
Exp. 210. June 6. Same to Erigeron annuus (L.) Pers. No infection.

PUCCINIA CARICINA DC. FROM CAREX SCOPARIA SCHK.

Exp. 199. June 5. Teleutospores from Eugene, Oregon, sent by Professor A. R. Sweetser, applied to Urtica gracilis Ait. No infection.

PUCCINIA CARICINA DC. FROM CAREX SQUARROSA L.

Exp. 205. June 6. Teleutospores applied to Urtica gracilis Ait. No infection.
Exp. 206. June 6. Same to Erigeron annuus (L). Pers. No infection.

PUCCINIA EMACULATA SCHW. FROM PANICUM CAPILLARE, L.

Exp. 231. June 16. Teleutospores applied to Ribes cynosbati L. No infection.
Exp. 232. June 16. Same to Urtica gracilis Ait. No infection.
Exp. 233. June 16. Same to Rumex britannica L. No infection.
Exp. 235. June 16. Same to Aster prenanthoides Muhl. No infection.
Exp. 236. June 16. Same to Lycopus americanus Muhl. No infection.

PUCCINIA IMPATIENTIS (SCHW.) ARTH. FROM ELYMUS VIRGINICUS L.

Exp. 185. May 29. Teleutospores furnished by Dr. Arthur, cult. 148, Indiana, April 17, applied to Impatiens biflora Walt. No infection. Perhaps if the waxy coating of the leaves had been removed more or less completely, the inoculation would have been successful.

PUCCINIA MALVACEARUM BERTERO FROM MALVA BOREALIS WALLM.

Exp. 225. June 7. Teleutospores received from Miss Minnie Reed, Santa Ana, California, February 25, on living plant, applied to Althaea rosea Cav. No infection.
Exp. 226. June 7. Same to Malva rotundifolia L. No infection.
Exp. 227. June 7. Same to Abutilon abutilon (L.) Rusby. No infection.

PUCCINIA MENTHA PERS. FROM KOELLIA VIRGINIANA (L.) MACM.

Exp. 194. May 29. Teleutospores collected at Wauseon, Fulton Co., Ohio, applied to Blephilia hirsuta (Ph.) Torr. No infection.
Exp. 195. May 29. Same to Mentha piperita L. No infection.
Exp. 196. May 29. Same to Monarda fistulosa L. No infection.

PUCCINIA PANICI DIET. FROM PANICUM VIRGATUM L.

Exp. 237. June 17. Teleutospores collected at Sandusky, Ohio, May, applied to Solidago canadensis L. No infection.
Exp. 238. June 17. Same to Aster prenanthoides Muhl. No infection.
Exp. 239. June 17. Same to Agrimonia parviflora Soland. No infection.
Exp. 240. June 17. Same to Urtica gracilis Ait. No infection.

PUCCINIA POCULIFORMIS (JACQ.) WETTST. FROM TRITICUM VULGARE VILL.

Exp. 118. Teleutospores applied to Berberis vulgaris L. No infection.

PUCCINIA POLYGONI-AMPHIBII PERS. FROM POLYGONUM EMERSUM (MX.) BRITT.

Exp. 141. April 24. Teleutospores obtained at Buckeye Lake, Licking Co., Ohio, applied to Hibiscus moscheutos L. No infection.
Exp. 142. April 24. Same to Rudbeckia speciosa Wenderoth. No infection.

Exp. 143. April 24. Same to Urtica gracilis Ait. No infection.
Exp. 144. April 24. Same to Ambrosia trifida L. No infection.
Exp. 145. April 24. Same to Erigeron annuus (L.) Pers. No infection.
Exp. 189. May 29. Teleutospores from Fair Oaks, Indiana, sent by Dr. Arthur, applied to Polygonum emersum (Mx.) Britt. No infection.
Exp. 190. May 29. Same to Rumex verticillatus L. No infection.

PUCCINIA SORGHI SCHW. FROM ZEA MAYS L., SWEET CORN.

Exp. 117. April 11. Teleutospores applied to Zea mays, Yellow Dent Corn. No infection.

PUCCINIA THOMPSONI HUME, FROM CAREX FRANKII KUNTH.

Exp. 191. May 29. Teleutospores applied to Cimicifuga racemosa (L.) Nutt. No infection.
Exp. 192. May 29. Same to Erigeron pulchellus Mx. No infection.
Exp. 193. May 29. Same to Solidago flexicaulis L. No infection.

PUCCINIA VERATRI NIESSL. FROM VERATRUM VIRIDE AIT.

Exp. 149. April 20. Teleutospores collected at Cheat Bridge, West Virginia, applied to Veratrum viride Ait. No infection; but the host plants were in poor condition; not growing and soon died.
Exp. 246. June 18. Same to Veratrum viride Ait. No infection; the host plant was wilted and soon died.

PUCCINIA VILFAE A. & H. FROM SPOROBOLUS LONGIFOLIUS (TORR.) WOOD.

Exp. 218. June 6. Teleutospores furnished by Rev. J. M. Bates, Red Cloud, Nebraska, applied to Chenopodium album L. No infection.
Exp. 219. June 6. Same to Verbena urticaefolia L. No infection.

UROMYCES BURRILLII LAG. FROM SCIRPUS FLUVIATILIS (TORR.) GR.

Exp. 116. April 11. Teleutospores applied to Hibiscus moscheutos L. No infection.
Exp. 139. April 20. Same to Hibiscus moscheutos L. No infection.

SUMMARY OF SUCCESSFUL INOCULATIONS.

Puccinia angustata Peck, teleutospores from Scirpus atrovirens Muhl; obtained aecidia [Aecidium lycopi Ger.] on Lycopus americanus Muhl.

Puccinia caulicola B. & Rav., teleutospores from Salvia lanceolata Willd.; obtained aecidia [Aecidium caulicolum Kellerm.] on Salvia lanceolata Willd.

Puccinia caricis-erigerontis Arth., teleutospores from Carex festucacea Willd.; obtained aecidia (Aecidium erigeronatum Schw.) on Leptilon canadense (L.) Britt.

Puccinia caricis-solidaginis Arth., teleutospores from Carex stipata Muhl.; obtained aecidia on Solidago canadensis L.

Puccinia cirsii-lanceolati Schroet., teleutospores from Carduus lanceolatus L.; obtained aecidia [Aecidium cirsii-lan-

ceolati Kellerm.], uredo and teleutospores on Carduus lanceolatus L.

Puccinia helianthi Schw., teleutospores from Helianthus mollis Lam.; obtained aecidia on Helianthus annuus L. and H. mollis Lam.

Puccinia hibisciata (Schw.) Kellerm., teleutospores from Muhlenbergia mexicana (L.) Trin.; obtained aecidia [Aecidium hibisciatum Schw.] on Hibiscus militaris Cav. and H. moscheutos L.

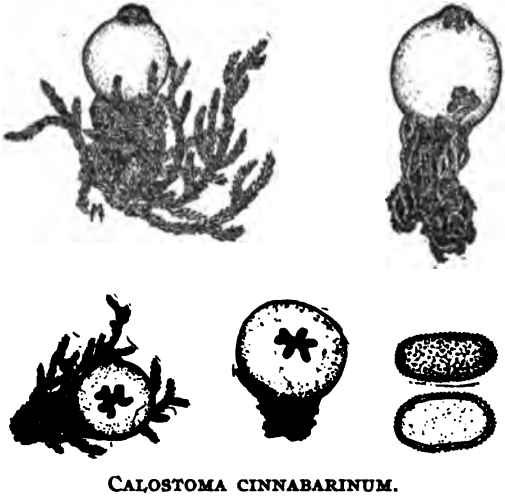
Puccinia lateripes Berk. & Rav., teleutospores from Ruellia strepens. Also aecidiospores from Ruellia strepens L.; obtained aecidia [Aecidium lateripes Kellerm], uredo and teleuto [Puccinia lateripes Berk. & Rav.] on Ruellia strepens L.

Puccinia subnitens Diet., teleutospores from Distichlis spicata (L.) Greene; obtained æcidia on Chenopodium album L.

MINOR MYCOLOGICAL NOTES. II.

W. A. KELLERMAN.

CALOSTOMA CINNABARINUM.— Recently specimens of this uncommon—or uncommonly collected—interesting little Puff-ball were kindly sent by Mrs. Annie Morrill Smith, which were col-



CALOSTOMA CINNABARINUM.

lected by Mrs. Sarah B. Hadley, South Canterbury, Connecticut, November 23, 1903. They represented the mature stage with the spores escaping. As nearly as could be determined they accorded well with the description of that species, but the spores were con-

siderably smaller than represented by Burnap (Bot. Gaz. 23:189, March 1897) who gives them as 15-18 x 8-10 μ. Our measurements are 10-15 x 8-10 μ. Lloyd (Myc. Notes, 13:126, Feb. 1903) says the spores vary "much as to size in specimens from different localities, and even in the same specimen. West Virginia specimens 10-14 x 6-8 mic. Massachusetts specimens 12-20 x 6-8 mic."

The figures here presented, prepared by Miss Clara G. Mark, show the two Connecticut plants natural size, as seen from the side and viewed from above. The spores shown to the right are magnified 250 diameters.

Since Burnap's study of the American species (l. c.) the number has been increased from three to four by the publication of a new one, namely, Calostoma microsporum by Professor Atkinson in the Journal of Mycology, 9:16, Feb. 1903. This he says resembles in the gross characters of the plant, C. ravenelii, but the spores are smaller; in the latter they are quite variable in size, 7-33 x 5-19 μ; in C. microsporum they are 6-10 x 3½-5 μ, and do not show such great variations. A revised Key of the American species would be as follows:

CALOSTOMA.

Spores *smooth* and oblong
- Small (6-10 x 3½-5 μ), C. microsporum Atkinson
- Larger (7-22 x 5-19 μ), C. ravenelii (Berk.) Massee

Spores echinulate or verrucose
- Globose and verrucose, C. lutescens (Schw.) Burnap
- Oblong and echinulate, C. cinnabarinum Desv.

ABUNDANCE OF DARLUCA FILUM.—At one of the large commercial greenhouses in Columbus, Ohio, I had opportunity some time ago to see an unusual quantity of Uromyces carophyllinus on Carnation plants. There was a separate section of the greenhouse devoted to carnation growing, and the attack was so severe that comparatively few flowers were obtained for market. Many of the plants—in fact many beds of them—were literally blackened by the Rust, and their care by the florist had been abandoned. Desiring some of the Carnation Rust I returned in a week prepared to carry away a large quantity but was disappointed in securing the valuable booty. Not a single good herbarium specimen, or suitable material for class use, could be secured. The peculiar color of the affected plants raised suspicion at first sight, and inspection showed that the uredineous sori were riotously invaded by Darluca filum—but then I secured an ample quantity of this for the Ohio Fungi exsiccati.

NOTES FROM MYCOLOGICAL LITERATURE. VII.

W. A. KELLERMAN.

REVISSIONE DELLE FORME DEL GENERE STEGANOSPORIUM CORDA by Dr. Alberto Noelli, published in Malpighia, An. XVII, Fasc. IX, pp. 412-418, contains descriptions of Steg. piriforme Corda, piriforme var. major Ell. & Ev., æsculi Sacc., compactum Sacc., muricatum Bon., cenangioides Ell. & Roth., and betulae Noelli n. sp. (nei rami di Betula alba). Synonyms and text figures of the spores are given.

INFECTION-POWERS OF ASCOSPORES IN ERYSIPHACEÆ, by Ernest S. Salmon, Journal of Botany, May and June 1903 (41:159-165, 204-12) details a series of infection experiments with the ascospores of Erysiphe graminis DC. on Hordeum vulgare. Heretofore experiments carried on by several persons have proved the existence of "biologic forms" of several species, in the conidial stage, of the Erysiphaceæ. The experiments referred to in this paper seem to show conclusively that the infection-powers of the ascospores, of which nothing has hitherto been known, are restricted in a definite manner. The results of the experiments will appear in the Beihefte of the Botanisches Centralblatt.

A VERY COMPREHENSIVE TREATISE ON THE FUNGOUS DISEASES OF GRASSES is that by L. H. Pammel and J. B. Weems in the Iowa Geological Survey, Bulletin 1 (pp. 185-292, 1901). Historical and descriptive notes are given of all the common fungi occurring on the native and cultivated grasses. Very many text figures and plates add much to the value of the article, which will prove very useful to beginners and amateurs, and even to professional botanists. The date in the preface shows that it was completed in 1899, but evidently there was considerable delay in publication. Consequently the nomenclature is not always such as the American mycologists use to-day.

DOTT. C. MASSALONGA IN NOTE MICOLOGICHE published in Malpighia, An. XVII, Fasc. IX, pp. 419-423, discusses the following: (1) Sulla causa di un precoce disseccamento delle foglie di Quercus pubescens Willd. (with description of Gloeosporium nervicolum C. Massal. in litt.); (2) Sull antracnosi delle foglie di Populus tremula L.; (3) Di un ifomicete che vive parassita sul tallo di Candelaria vulgaris A. Massal. (with description of Fusarium lechenicolum C. Massal. in litt.)

A NEW SPECIES OF GEASTER is described and figured in the Botanical Gazette, 36:303-6, Oct. 1903, by George F. Atkinson; it is called Geaster leptospermus Atks. & Coker. It is remarkable in its (1) habitat (on bark of living trees among moss); (2) belongs to the fornicate section of the genus (in which but few

species are listed); (3) the spores are smooth (not echinulate or tuberculate as in the other species). The plants are oval to globose, only 3-4½ mm. in diameter, and inconspicuous before dehiscence takes place. It affects the same situation as Lycoperdon leprosum, with which it is often associated, but the individuals are scattered—never growing in close clusters.

Die Mikrosporen von Anthoceros dichotomus Raddi, Tilletia abscondita Syd. nov. spec., Ann. Mycolog. 1:174-76, March 1903, von H. u. P. Sydow, refers to the microspores found in the genus Sphagnum; after quoting a paragraph from Nawaschin, he adds: "Die 'Mikrosporen' von *Anthoceros dichotomus* gleichen nun sehr denjenigen der *Sphagnum-Arten.* Sie sind kugelig oder fast kugelig, seltener elliptisch, hellbraun, mit warzig-netzförmiger Struktur, analog den meisten Ustilagineen-Sporen, versehen; sie messen 11-17 μ im Durchmesser (selten bis 20 μ lang), sind also grösser als die Mikrosporen der *Sphagnum-Arten,* welche nur 11-12 μ diam. erreichen. Das Epispor ist etwa 2½ μ breit. Wir sind überzeugt, dass auch diese 'Mikrosporen' einer Ustilaginee angehören und benennen unsere Art als *Tilletia? abscondita* Syd. nov. spec."

Jakob Eriksson, in Arkiv för Botanik, Band 1 (pp. 139-146), presents a paper read May 13, 1903, commenting on the researches of Professor H. Marshall Ward and the objections urged to the Mycoplasm Hypothesis. He takes occasion to reaffirm strongly his original view of this matter and I therefore transcribe the following portion of the paper: "I first beg to draw attention to the fact that my theory consists of two essential moments. In the first place I have asserted, that when it is a question of explaining the origin of soral flecks (spots or sori of uredospores) in general, we have to take into account not only external infection from the surroundings (Uredo—and Aecidium-pustules), but also a hitherto unnoticed internal germ of disease in one form or another, and I have based my assertion of the *existence* of an internal germ of disease on such numerous observations in the open and such numerous experiments in isolated glass houses, that I venture to regard this existence as proved, at least until sufficiently comprehensive proofs to the contrary have been produced from some other quarter. In the next place, when attempting to explain the *form* in which such an internal germ of disease could be thought to exist, I have expressed the hypothesis—grounded on anatomical examinations—that in the life of the fungus there may be a period of development previous to the mycelium-stage when the fungus exists in a latent symbiotic life with the protoplasm of the host, and I have proposed the name 'Mycoplasm' for the double organism I had thus supposed. I have, however, expressly emphasized that it was not my intention that this very intricate question should by any means be considered as exhaustively solved, but that I merely wished to main-

tain the hypothesis of Mycoplasm until a better solution should be proposed."

CERCOSPORITES SP., A NEW FOSSIL FUNGUS, by Ernest S. Salmon (Jour. Bot. 41:127-130, April 1903), is the title of a critical review of "Microflora e Microfauna nel disodile di Melilli in Sicilia," L. Pampaloni (Rendiconti della R. Accad. dei Lincei, 11:250-1, 1902). In the latter paper two genera of Erysiphaceæ are described, namely, Uncinulites (U. baccarini) and Erysiphites (E. melilli). After examination of the material Mr. Salmon concludes that the portion called by Dr. Pampaloni a perithecium consists of a single cell—and hence neither of these fossil plants have anything to do with Erysiphaceæ. He ventures no further interpretation of the Erysiphites, "whether of animal or vegetable origin," but the fungus called Uncinulites he regards as referable to the genus Cercospora agreeing in some respects with Cercospora acerina described by Hartig. Salmon concludes his article as follows: "The following diagnosis may be given of this fossil fungus: Cercosporites sp. Hyphæ myceliares filamentosæ singulatim repentes dilute brunneæ septatæ 5-8 μ diam. hinc inde in cellulas magnas 15-23 μ diam. maturitate opacas atrobrunneas plus minus globosas 3-6-catenulatas vel raro biseriatim aggregatas probabiliter pro sclerotiis habendas subito inflat."

ON SPECIALIZATION OF PARASITISM IN THE ERYSIPHACEÆ, by Ernest S. Salmon, referred to previously in these Notes, is published in the Beihefte zum Botanischen Centralblatt, Band XIV, Heft 3, pp. 261-315, pl XVIII. It is a full account of work done, methods, and additional results, pertaining to the question of 'biologic forms,' and to this comprehensive article the interested reader is referred as no brief outline would be satisfactory. A Bibliography of ten entries is included. Convenient tables give a synopsis of the work done by the author.

FUNGUS ENEMIES OF APPLE, PEAR AND QUINCE, by F. L. Stevens, published in the N. C. Agr. Exp. Sta. Bulletin No. 183 (pp. 64-82), April 1903, gives a popular account with several text-figures of the common fungous parasites as Apple Scab, Fire Blight, Rust (Gymnosporangium), Bitter-rot, Pear Scab, Leaf Spot (Septoria), Leaf Blight (Entomosporium), etc.

IN THE OESTERREICHISCHE BOTANISCHE ZEITSCHRIFT for 1903, Nos. 4-8, A. Zahlbruckner publishes an article entitled Vorarbeiten zu einer Flechtenflora Dalmatiens. Several new species are described.

P. DIETEL TRANSFERS UREDO LÆVIUSCULA D. & H., which was published in Erythea, 2:127, based upon material collected in California on Polypodium californicum, to Thekopsora. A re-examination of the material revealed teleutospores; the name now given is Thekopsora læviuscula D. & H. See Annales Mycologici, 1:416. Sept. 1903.

R. MAIRE AND P. A. SACCARDO UNDER THE TITLE SUR UN NOUVEAU GENRE DE PHACIDIACEES, Ann. Mycolog. 1:417-9, Sept. 1903, furnishes the diagnosis of Didymascella Maire et Sacc. gen. nov. "A *Didymasco* sporidiis phæodidymis, nec non habitu ascomatis paraphysibusque recedit, et certe ad Phacidiaceus proxime accedit.

MICHIGAN MUSHROOMS, A FEW OF THE COMMON EDIBLE FUNGI occurring in the State, are described and illustrated by B. O. Longyear in the Mich. Exp. Sta. Bull. 208:79-100, April 1903. The Morels and Puffballs with a general account of the character and structure of Mushrooms occupy the pages — presented in a very acceptable manner for beginners in Mycology.

BACTERIAL SPOT, A NEW DISEASE OF CARNATIONS, by A. F. Woods, is published in Science, N. S. 18:537-8, October 23, 1903. The organism causing this spot disease is said to be quite distinct from the orange-colored Bacterium dianthi described on this host by Arthur and Bolley. Successful inoculations have been made; complete cultural characters for various media will be determined. The author says that under natural conditions the bacteria appear to gain entrance to the leaves and stems from the slight injuries produced by the red spider and by other causes.

MYCOLOGISCHE FRAGMENTE VON PROF. DR. FRANZ V. HÖHNEL in Wien, published in Annales Mycologici, 1:391-414, contains the descriptions of a large number of new species and also the following genera: Heimerlia novum Myxomycetum (Echinosteliacearum) genus; Siropatella n. g. Excipulacearum; Agyriellopsis n. g. Excipulacearum. Critical notes on several species also are given. Concerning Exosporium rosæ Fuckel the author states that it is no Exosporium; it is Cercospora rosæ (Fuckel) de Höhnel with synonomy as follows: Exosporium rosæ Fckl. Symb. Myc., Cercospora rosicola Allesch. & Schnabl (non Pass.) F. Bavar. 498, C. rosæ-alpinæ C. Mass. and C. hypophylla Cavara.

VERSUCHE MIT HETEROECISCHEN ROSTPILZEN, Vorläufige Mitteilung, by W. Tranzschel, Centrbl. Bakt. Parasit. Infek. 2. Ab. 11:106, 1903, states in part as follows: "In einer Reihe von Versuchen gelang es durch Aussaat der Sporen von Aecidium leucospermum DC. (auf Anemone nemorosa L.) auf Sorbus Aucuparia L. die Uredosporen von Ochrospora Sorbi (Oud.) Diet. zu erzeugen. Puccinia Polygoni amphibii Pers. (auf Polyg. amphibium L.) ergab das Aecidium sanguinolentum Lindr. auf Geranium palustre L. und G. pratense L. Die der Pucc. Polygoni amphibii Pers. entsprechende Micro-Art) ist Pucc. Morthieri Körn."

INDEX TO UREDINEOUS CULTURE EXPERIMENTS WITH LIST OF SPECIES AND HOSTS FOR NORTH AMERICA. I.

W. A. KELLERMAN.

Careful culture work to determine life histories of fungi or cycles of development was initiated by De Bary in 1865. It was continued by him in 1866 and in the same year also taken up by Oersted and Woronin. A few years later other foreign botanists engaged in similar work, and the list continued to the present, contains such additional names as Schroeter, Rostrup, Winter, Schenk, Cornu, Plowright, Klehban, Hartig, Dietel, Barclay, Fischer, Tubeuf, Soppit, Transchal Eriksson Pazschke, Juel, Wagner, Bubák, Jacky, Shirai, Müller, and Ward.

In America Dr. Farlow was the pioneer worker, publishing his first experiments on the "Gymnosporangia or Cedar Apples of the United States" in 1880. He continued work on the same group in 1885, and it was supplemented (independently) by Halsted in 1886-7, published in the Bulletin of the Iowa Agricultural College. More fruitful results were obtained by Thaxter in 1887 and again in 1889—the connection between the several species of Gymnosporangium and associated Roestelia occurring in this country being satisfactorily established, which may be found in print in the Proceedings of the American Academy of Arts and Sciences, Boston; and Bulletin 134, Conn. Agr. Exp. Sta. Pammel repeated the experiment verifying connection in case of one of the species (Ia. Hort. Soc. Rep. 1893), the same also by Stewart and Carver (Proc. Ia. Acad. Sci. for 1895, vol. 3; same in N. Y. Exp. Sta. for 1895.)

No connections between Uredineous forms were then experimentally determined—except that Howell (in 1890) showed the three stages of the Clover Rust to be genetically related, and Clinton (in 1894) the two stages of the Bramble Rust—until 1899 when extended and important work was reported by Arthur and by Carleton. The latter dealt with the Cereal Rusts only, making sowings almost exclusively of Uredospores mainly from Wheat, Oats, Barley, Rye, and Maize, on the same and on different host species. The interesting results were published as Bulletin No. 16, U. S. Dept. Agr. Div. Veg. Physiology & Pathology, April 23, 1899.

Arthur communicated his first results to the public in a paper read before the A. A. A. S., Botanical Section, Columbus, Ohio, Ag 1899, and the same was published in the Botanical Gazette, 29:268-276, April 1900. Of eleven species of Uredineæ, the

æcidial and teleutosporic forms were definitely connected by these cultures. In the Journal of Mycology (8:51-6), June 1902, he reported cultures made in 1900 and 1901—successful inoculations in eight cases, four being repetitions of previously demonstrated connections, and the complete cycle for four being reported here for the first time. Arthur's third report (cultures in 1902) was published in the Botanical Gazette (35:10-23) for January 1903. The successful cultures made number eleven previously reported and seven reported for the first time.

In 1902 cultures were undertaken by Kellerman. The first case of demonstrated connection was published in the Journal of Mycology, 8:20, May 1902, and appeared in the same periodical (9:6-13) in Feb. 1903. This showed seven successful inoculations, two of these not having been previously demonstrated. The second Report (continuing his work during 1903) detailing more extended cultures was given in part in the Journal of Mycology (9:109-10) May 1903, and the year's work is reported in full on a previous page of this number of the Journal issued simultaneously with (and included in) this Index.

This brief historical outline (some of the items of which were furnished by Dr. Arthur) shows that as yet comparatively few American mycologists have undertaken culture work to determine life cycles of our numerous species of Uredineæ; but this interesting and important work will doubtless have shortly its due proportion of devotees. It may therefore be a service to workers to put on record for convenient reference, all that has been done heretofore with American material. The maximum usefulness of the Index will perhaps be realized by adopting an alphabetical arrangement, and including Authors, Host-species furnishing material for inoculation, species of Uredineæ used, Host-species on which successful inoculations have been reported, and the Uredineous species in their several stages that have been obtained by the cultures. Abundant cross-references and common synonyms will be found in proper place. No inconvenience will then be encountered under whatever subject or name search is made.

An explanation for a single item will illustrate the plan of the Index and suggest (though it is hoped not necessary) the interpretation of the entries. Taking a case, say Dr. Arthur's experiment showing the genetic connection of Puccinia angustata Pk. and Aecidium lycopi Ger., we find four entries printed as follows:

(1) Puccinia angustata Pk. from Scirpus atrovirens (Aecidium lycopi Ger. on Lycopus americanus). J. C. Arthur. Jour. Mycol. 8:53. June, 1902.

This, as would readily be surmised, means that culture material (teleutospores) of Puccinia angustata Pk. taken from Scirpus atrovirens, produced Aecidium lycopi Ger. when sown

on Lycopus americanus, the work being done by Arthur and reported in the Journal of Mycology, Volume 8, page 53, June 1902. But the same experiment is also found in the following:

(2) Scirpus atrovirens (Aecidium lycopi Ger. on Lycopus americanus), *see* Puccinia angustata Pk. from Scirpus atrovirens. [Arthur.]

It will be noticed that all of the facts are given in this cross-reference that are contained in the first paragraph reproduced—obviating the necessity of turning to another entry—except that the place of publication is not here repeated, which is always given where the first word of the entry is the name of the species experimented with, i. e., whose spores were used as culture material. To put this into a sentence it would be: From Scirpus atrovirens culture material was taken by means of which there was produced Aecidium lycopi Ger. on Lycopus americanus, said culture material being teleutospores of Puccinia angustata Pk. taken from plant first named, experiment by Arthur. The third entry for the culture under consideration is as follows:

(3) Aecidium lycopi Ger. on Lycopus americanus, *see* Puccinia angustata Pk. from Scirpus atrovirens. [Arthur.]

The same being translated is: Aecidium lycopi Ger. was produced on Lycopus americanus by using teleutospores of Puccinia angustata Pk. taken from Scirpus atrovirens, experiment by Arthur. But a fourth entry is made in the following form:

(4) Lycopus americanus (Aecidium lycopi Ger.) *see* Puccinia angustata Pk. from Scirpus atrovirens. [Arthur.]

This would be first found in case search was made for Lycopus as a host plant on which an æcidium accurred. The entry would be read: On Lycopus americanus was produced Aecidium Lycopi Ger. with teleutospores of Puccinia angustata Pk. taken from Scirpus atrovirens in an experiment by Arthur.

In case uredospores or æcidiospores were used these words (or Uredo or Aecidium) immediately follow the name of the species in each of the entries.

It will be noticed that "from" is always to be preceded by culture material, and that "on" is preceded by æcidia, etc., produced by the inoculation.

Brackets are used for hosts, when the indexer does not find printed in immediate connection the items so enclosed, but determined the same from the context or other ample evidence derived from the author's publication. Thanks are extended in advance to mycologists who will kindly notify me of additions or corrections that should be made.

A summary or list of Alternate Forms follows the first part of the Index in which are given for quick reference the genetic connections established by the cultures recorded, listed in alphabetical order under two heads. Thus the fact demonstrated that

Puccinia windsoriæ Schw. and Aecidium pteleæ B. & C. are alternate forms would be shown by either or both of the following entries:

Aecidium pteleae B. & C. — Puccinia windsoriae Schw.
Puccinia windsoriae Schw. — Aecidium pteleae B. & C.

This INDEX will be reprinted as a *Separate* for those who may wish it in form for convenient use (price 25 cents) and Supplementary Lists will be published from time to time. It has seemed best to list names generally according to most recent nomenclature, necessary cross-references obviating any inconvenience that otherwise might occur.

AECIDIUM albiperidium Arth. on Ribes cynosbati L., *see* Puccinia albiperidia Arth. from Carex pubescens. [Arthur.]

AECIDIUM asterum Schw. on Aster paniculatus and A. cordifolius, *see* Puccinia caricis-asteris Arth. from Carex foenea. [Arthur].

AECIDIUM berberidis from [Berberis vulgaris] (Puccinia graminis tritici on Hordeum [distichum]). Mark Alfred Carleton. U. S. Dept. Agr. Div. Veg. Phys. & Path. Bull. 16:54. 27 Sept. 1899.

AECIDIUM berberidis on Berberis vulgaris, *see* Puccinia poculiformis (Jacq.) Wettst. from Cinna arundinacea. [Arthur].

AECIDIUM calystegiæ Desm. on Convolvulus sepium, *see* Puccinia convolvuli Cast. from Convolvulus sepium. [Arthur]

AECIDIUM caulicolum Kellerm., *see* Puccinia caulicola Tr. & Gall. from Salvia lanceolati. [Kellerman]

AECIDIUM cirsii-lanceolata Kellerm. on Carduus lanceolatus L., *see* Puccinia cirsii-lanceolati Schroet. from Carduus lanceolatus L. [Kellerman]

AECIDIUM ellisii Tr. & Gall. on Chenopodium album L., *see* Puccinia subnitens Diet. from Distichlis spicata (L.) Greene. [Arthur]

AECIDIUM [erigeronatum Schw.] on Erigeron annuus, *see* Puccinia caricis-erigerontis Arth. from Carex festucacea. [Arthur]

AECIDIUM euphorbiæ Am. Auct., *see* Uromyces euphorbiæ C. & P. [Arthur]

AECIDIUM fraxini Schw. on Fraxinus viridis, *see* Puccinia peridermiospora (E. & T.) Arth. from Spartina cynosuroides. [Arthur]

AECIDIUM on Helianthus [sp.], *see* Puccinia helianthi from Helianthus [sp.]. [Carleton]

AECIDIUM hibisciatum Schw. on Hibiscus militaris Cav., *see* Puccinia hibisciata (Schw.) Kellerm. from Muhlenbergia mexicana (L.) Trin. [Kellerman]

AECIDIUM hibisciatum Schw. on Hibiscus moscheutos, *see* Puccinia hibisciata (Schw.) Kellerm. (P. muhlenbergiæ Arth. & Hol.; P. windsoriæ Burr. non Schw.) from Muhlenbergia mexicana. [Kellerman]

AECIDIUM impatientis Schw. on Impatiens aurea Muhl., *see* Puccinia rubigo-vera [P. impatientis (Schw.) Arthur] from Elymus virginicus L. [Arthur]

AECIDIUM jamesianum on Asclepias incarnata and A. syriaca L., *see* Puccinia bartholomæi Diet. [P. jamesiana (Pk.) Arth.] from Atheropogon curtipendulus Fourn. (Bouteloua curtipendula Torr.) [Arthur]

AECIDIUM lateripes Kellerm.. on Ruellia strepens, *see* Puccinia lateripes B. & Rav., from Ruellia strepens. [Kellerman]

AECIDIUM lateripes Kellerm., *see* Puccinia lateripes B. & Rav. Aecidiospores [Aecidium lateripes Kellerm.] from Ruellia strepens. [Kellerman]

AECIDIUM lycopi Ger., *see* Puccinia angustata Pk. aecidiospores (Aecidium lycopi Ger.). [Arthur; Kellerman]

AECIDIUM lycopi Ger. on Lycopus americanus, *see* Puccinia angustata Pk. from Scirpus atrovirens. [Arthur]

AECIDIUM oenotheræ Pk., *see* Ae. peckii DeToni. [Kellerman]

AECIDIUM osmorrhizæ Pk. from Washingtonia claytoni (Osmorrhiza brevistylis) ([Puccinia osmorrhizæ teleuto] on Chærophyllum procumbens and (?) on Washingtonia claytoni). W. A. Kellerman, Jour. Mycol. 9:10. Feb. 1903.

AECIDIUM pammelii Trel. from Euphorbia corollata L. (Puccinia panici Diet. uredo on Panicum virgatum). William Stuart. Proc. Ind. Acad. Sci. 1901:284. 1902.

AECIDIUM peckii DeToni [Ae. oenotheræ Pk.] on Onagra biennis (L.) Scop. [Oenothera biennis L.] *see* Puccinia peckii (DeToni) Kellerm. (P. caricina DC. p.p.) from Carex trichocarpa. [Kellerman]

AECIDIUM peckii DeT. on Onagra biennis (L.) Scop. (Oenothera biennis L., *see* Puccinia peckii (DeT.) Kellerm. from Carex trichocarpa Muhl. [Arthur]

AECIDIUM pentstemonis Schw. on Pentstemon pubescens, *see* Puccinia americana Lagh. from Andropogon scoparius. [Arthur]

AECIDIUM pentstemonis spermogonia on Pentstemon hirsutus, *see* Puccinia andropogonis Schw. from Andropogonis scoparius. [Kellerman]

AECIDIUM plantaginis Ces (?) on Plantago rugelii, *see* Uromyces aristidæ E. & E. from Aristida oligantha Mx. [Arthur]

AECIDIUM pteleæ on Ptelea trifoliata, *see* Puccinia windsoriæ Schw. from Tricuspis seslerioides Torr. (Triodea cuprea Jacq.) [Arthur]

AECIDIUM pteleæ on Ptelea trifoliata, *see* Puccinia windsoriæ Schw. from Tricuspis sesleriodes. [Kellerman]

AECIDIUM ranunculacearum (?) on Anemone canadensis, *see* Puccinia simillima Arth. from Phragmites phragmites (L.) Karst. (P. communis Trin.). [Arthur]

AECIDIUM rubellum Pers. on Rumex crispus, R. obtusifolius, *see* Puccinia phragmitis (Schum.) Körn. from Phragmites communis. [Arthur]

AECIDIUM [rubellum] on Rumex altissimus, *see* Puccinia phragmitis (Schw.) Körn. from Phragmites phragmites. [Bates]

AECIDIUM sambuci Schw. on Sambucus canadensis, *see* Puccinia atkinsoniana Diet. from Carex lurida. [Kellerman]

AECIDIUM sambuci Schw. (?), *see* Puccinia bolleyana Sacc. aecidiospores (Aecidium sambuci Schw. ?). [Stuart]

AECIDIUM sambuci Schw. (?) on Sambucus canadensis, *see* Puccinia bolleyana Sacc. from Carex trichocarpa. [Arthur]

AECIDIUM sambuci Schw. on Sambucus canadensis, *see* Puccinia bolleyana Sacc. from Carex trichocarpa. [Kellerman]

AECIDIUM smilacis Schw. on Smilax herbacea L. and S. hispida Muhl., *see* Puccinia amphigena Diet. from Calamovilfa longifolia (Hook.) Hack. [Arthur]

AECIDIUM solidaginis Schw. on Solidago canadensis L., S. cæsia L. (spermogonia), S. rigida L. (spermogonia), S. serotina Ait., and S. ulmifolia Muhl. (spermogonia), *see* Puccinia caricis-solidaginis Arth. from Carex jamesii Schw. [Arthur]

AECIDIUM solidaginis Schw. on Solidago canadensis and S. serotina, *see* Puccinia caricis-solidaginis Arthur from Carex stipata Muhl. [Arthur.]

AECIDIUM urticæ Schum., *see* Puccinia caricis (Schum.) Reb. æcidiospores (Aecidium urticæ Schum.) [Arthur]

AECIDIUM urticæ Schum. on Urtica gracilis, *see* Puccinia caricis (Schum.) Reb. from Carex riparia. [Kellerman]

AECIDIUM urticæ Schum. on Urtica gracilis, *see* Puccinia caricis (Schum.) Reb. from Carex stricta. [Kellerman]

AECIDIUM urticæ on Urtica gracilis, *see* Puccinia caricis (Schum.) Reb. from Carex stricta. [Arthur]

AECIDIUM verbenicola K. & S., *see* Puccinia vilfæ A. & H. æcidiospores (Aecidium verbenicola K. & S.). [Arthur]

AGROPYRON richardsoni (Puccinia graminis tritici), *see* Puccinia graminis tritici uredospores from Triticum vulgare. [Carleton]

ALOPECURUS alpestris (Puccinia coronata Corda), *see* Puccinia coronata Corda uredospores from Avena sativa. [Carleton]

AMELANCHIER botryapium, *see* Amelanchier [canadensis] and A. botryapium. [Halsted]

AMELANCHIER botryapium (Roestelia botryapites Schw.), *see* Gymnosporangium clavariæforme DC. from Juniperus communis L. [Halsted]

AMELANCHIER canadensis (Roestelia aurantiaca), *see* Gymnosporangium clavipes from [Juniperus virginiana]. [Thaxter]

AMELANCHIER [canadensis] (Roestelia botryapites Schw.), *see* Gymnosporangium clavariæforme DC. from Juniperus canadensis. [Halsted]

AMELANCHIER canadensis (Roestelia botryapites), *see* Gymnosporangium biseptatum from [Cupressus thyoides]. [Thaxter]

AMELANCHIER canadensis (Roestelia cornuta), *see* Gymnosporangium conicum from [Juniperus virginiana]. [Thaxter]

AMELANCHIER canadensis (Roestelia nidus-avis Thax.), *see* Gymnosporangium nidus-avis Thax. from Juniperus virginiana. [Thaxter]

(?) AMELANCHIER canadensis (Roestelia transformans (?)), *see* Gymnosporangium ellisii from [Cupressus sp.]. [Thaxter]

AMELANCHIER canadensis (————————? spermogonia), *see* Gymnosporangium biseptatum from [Cupressus thyoides]. [Farlow]

AMELANCHIER canadensis (————————? spermogonia), *see* Gymnosporangium clavipes from [Juniperus virginiana]. [Farlow]

AMELANCHIER canadensis (————————? spermogonia), *see* Gymnosporangium macrocarpus from Juniperus virginiana. [Farlow]

ANDROPOGON scoparius ([Aecidium pentstemonis] spermogonia on Pentstemon hirsutus), *see* Puccinia andropogonis Schw. from Andropogon scoparius. [Kellerman]

ANDROPOGON scoparius (Aecidium pentstemonis Schw. on Pentstemon pubescens), *see* Puccinia americana Lagh. from Andropogon scoparius. [Arthur]

ANDROPOGON scoparius (Puccinia americana Lagh. uredo), *see* Puccinia americana Lagh. aecidiospores [Aecidium pentstemonis Schw.] from Pentstemon pubescens. [Arthur]

ANEMONE canadensis (Aecidium ranunculacearum [?)], *see* Puccinia simillima Arth. from Phragmites phragmites (L.) Karst. (P. communis L.) [Arthur]

ANTHOXANTHUM odoratum (Puccinia coronata Corda), *see* Puccinia coronata Corda uredospores from Avena sativa. [Carleton]

ARISTIDA oligantha Mx. (Aecidium plantaginis Ces (?) on Plantago rugelii), *see* Uromyces aristidæ E. & E. from Aristida oligantha Mx. [Arthur]

ARRHENATHERUM elatius (Puccinia coronata Corda), *see* Puccinia coronata Corda æcidiospores from Rhamnus lanceolata. [Carleton]

ARTHUR, J. C. Chrysanthemum Rust. Ind. Agr. Exp. Sta. Bull. 85:143-150. Oct. 1900.

ARTHUR, J. C. Cultures of Uredineæ in 1899. Bot. Gaz. 32: 268-276. April 1900.

ARTHUR, J. C. Cultures of Uredineæ in 1900 and 1901. Jour. Mycol. 8:51-6. June 1902.

ARTHUR, J. C. Cultures of Uredineæ in 1902. Bot. Gaz. 35: 10-23. Jan. 1903.

ASCLEPIAS incarnata (Aecidium jamesianum), *see* Puccinia bartholomæi Diet. [P. jamesiana (Pk.) Arth.] from Atheropogon curtipendulus Fourn. (Bouteloua curtipendula Torr.). [Arthur]

ASCLEPIAS syriaca L. (Aecidium jamesianum), *see* Puccinia bartholomæi Diet. [P. jamesiana (Pk.) Arth.] from Atheropogon curtipendulus Fourn. (Bouteloua curtipendula Torr.). [Arthur]

ASTER cordifolius (Aecidium asterum Schw.), *see* Puccinia caricis-asteris Arth. from Carex foenea. [Arthur]

ASTER paniculatus (Aecidium asterum Schw.), *see* Puccinia caricis-asteris Arth. from Carex foenea. [Arthur]

ASTER paniculatus (Puccinia caricis-asteris Arth. æcidia), *see* Puccinia caricis-asteris Arth. from Carex foenea Willd. [Arthur]

ATHEROPOGON curtipendulus Fourn. (Bouteloua curtipendula Torr.) (Aecidium jamesianum on Asclepias incarnata and A. syriaca L.), *see* Puccinia bartholomæi Diet. [P. jamesiana (Pk.) Arth.] from Atheropogon curtipendulus Fourn. (Boutelcua curtipendula Torr.). [Arthur]

AVENA fatua (Puccinia coronata Corda), *see* Puccinia coronata Corda uredospores from Avena sativa. [Carleton]

AVENA pratensis (Puccinia coronata Corda), *see* Puccinia coronata Corda uredospores from Avena sativa. [Carleton]

AVENA sativa (Puccinia coronata Corda), *see* Puccinia coronata Corda æcidiospores from Rhamnus lanceolata. [Carleton]

AVENA sativa (Puccinia coronata Corda), *see* Puccinia coronata Corda uredospores from Avena sativa. [Carleton]

AVENA sativa (Puccinia coronata Corda on Alopecurus alpestris, Anthoxanthum odoratum, Avena fatua, A. pratensis, A. sativa. Dactylis glomerata, Eatonia sp. indet., Festuca sp. indet., Koeleria cristata, Phalaris arundinacea, Phleum pratense, Polypogon monspeliensis), *see* Puccinia coronata Corda uredospores from Avena sativa. [Carleton]

AVENA sativa (Puccinia graminis), *see* Puccinia graminis uredospores. [Hitchcock & Carleton]

AVENA sativa (Puccinia graminis), *see* Puccinia graminis uredospores from Avena sativa. [Hitchcock & Carleton]

AVENA sativa (Puccinia graminis on Avena sativa), *see* Puccinia graminis uredospores from Avena sativa. [Hitchcock & Carleton]

BARLEY, *see* Hordeum distichum.

BATES, John M. The finding of Puccinia phragmitis (Schum.) Körn in Nebraska.

BERBERIS vulgaris (Aecidium berberidis), *see* Puccinia poculiformis (Jacq.) Wettst. from Cinna arundinacea. [Arthur]

BERBERIS vulgaris (Puccinia graminis tritici on Hordeum [distichum]), *see* Aecidium berberidis from [Berberis vulgaris]. [Carleton]

BOUTELOUA curtipendula Torr., *see* Atheropogon curtipendulus Fourn. [Arthur]

CÆOMA miniata Am. Auct. on Rosa [Tea rose, Kaiserin Augusta Victoria], *see* Phragmidium speciosum Fr. from Rosa sp. [Arthur]

CÆOMA ulmariæ Thüm., *see* Triphragmium ulmaria (Schum.) Lk. aecidiospores. [Arthur]

CÆOMA ulmariæ Thüm., *see* Triphragmium ulmariæ (Schum.) Lk. (Cæoma ulmariæ Thüm.). [Arthur]

CALAMOVILFA longifolia (Hook.) Hack. (Aecidium smilacis Schw. on Smilax herbacea L. and S. hispida Muhl.), *see* Puccinia amphigena Diet. from Calamovilfa longifolia (Hook.) Hack. [Arthur]

CARDUUS lanceolatus L (Puccinia cirsii-lanceolati Schroet. aecidia [Aecidium cirsii-lanceolati Kellerm.]), uredo and teleuto on Carduus lanceolatus L., *see* Puccinia cirsii-lanceolati Schroet. from Carduus lanceolatus L. [Kellerman]

CARDUUS lanceolatus L. (Puccinia cirsii-lanceolati Schroet. aecidia [Aecidium cirsii-lanceolati Kellerm.], uredo and teleuto), *see* Puccinia cirsii-lanceolati Schroet. [Kellerman]

CAREX festucacea (Aecidium [erigeronatum Schw.] on Erigeron annuus), *see* Puccinia caricis-erigerontis Arth. from Carex festucacea. [Arthur]

CAREX festucacea Willd. (Puccinia caricis-erigerontis Arth. aecidia on Erigeron annuus (L.) Pers., E. philadelphicus L. and Leptilon canadense (L.) Britt.), *see* Puccinia caricis-erigerontis Arth. from Carex festucacea Willd. [Arthur]

CAREX festucacea Willd. (Puccinia caricis-erigerontis Arth. aecidia on Leptilon canadense (L.) Britt.), *see* Puccinia caricis-erigerontis Arth. from Carex festucacea Willd. [Kellerman]

CAREX foenea (Aecidium asterum Schw. on Aster paniculatus and A. cordifolius), *see* Puccinia caricis-asteris Arth. from Carex foenea. [Arthur]

CAREX foena Willd. (Puccinia caricis-asteris Arth. aecidia on Aster paniculatus), *see* Puccinia caricis-asteris Arth. from Carex foenea Willd. [Arthur]

CAREX jamesii Schw. (Aecidium solidaginis Schw. on Solidago canadensis L., S. cæsia L. (spermogonia), S. rigida L. (spermogonia), S serotina Ait., and S. ulmifolia Muhl. (spermogonia)), *see* Puccinia caricis-solidaginis Arth. from Carex jamesii Schw. [Arthur]

CAREX lurida (Aecidium sambuci Schw. on Sambucus canadensis), *see* Puccinia atkinsoniana Diet. from Carex lurida. [Kellerman]

CAREX lurida Wahl (Puccinia sambuci (Schw.) Arth. aecidia [Aecidium sambuci Schw.] on Sambucus canadensis), *see* Puccinia sambuci (Schw.) Arth. (P. atkinsoniana Diet.) from Carex lurida Wahl. [Arthur]

CAREX pubescens (Aecidium albiperidium on Ribes cynosbati L.), *see* Puccinia albiperidia Arth. from Carex pubescens. [Arthur]

CAREX stipata Muhl. (Aecidium solidaginis Schw. on Solidago canadensis and S. serotina), *see* Puccinia caricis-solidaginis Arthur from Carex stipata Muhl. [Arthur]

CAREX stipata Muhl. (Puccinia caricis-solidaginis Arth. aecidia on Solidago canadensis L.), *see* Puccinia caricis-solidaginis Arth. from Carex stipata Muhl. [Kellerman]

CAREX stricta (Aecidium urticæ on Urtica gracilis), *see* Puccinia caricis (Schum.) Reb. from Carex stricta. [Arthur]

CAREX stricta (Aecidium urticæ Schum. on Urtica gracilis), *see* Puccinia caricis (Schum.) Reb. from Carex stricta. [Kellerman]

CAREX stricta (Puccinia caricis (Schum.) Reb. uredo), *see* Puccinia caricis (Schum.) Reb. aecidiospores [Aecidium urticæ Schum.] from [Urtica sp.] [Arthur]

CAREX stricta Lam. (Puccinia caricis Schum.) Reb. aecidia on Urtica gracilis),*see* Puccinia caricis (Schum.) Reb. from Carex stricta Lam. [Arthur]

CAREX trichocarpa Muhl. (Aecidium peckii DeT. on Onagra biennis (L.) Scop. (Oenothera biennis L.)), *see* Puccinia peckii (DeT.) Kellerm. from Carex trichocarpa Muhl. [Arthur]

CAREX trichocarpa (Aecidium peckii DeToni [Ae. oenotheræ Pk.] on Onagra biennis (L.) Scop. [Oenothera biennis L.]), *see* Puccinia peckii (DeToni) Kellerm. (P. caricina DC. p. p.) from Carex trichocarpa. [Kellerman]

CAREX trichocarpa (Aecidium sambuci Schw. on Sambucus canadensis), *see* Puccinia bolleyana Sacc. from Carex trichocarpa. [Kellerman]

CAREX trichocarpa (Aecidium sambuci Schw. [?]), *see* Puccinia bolleyana Sacc. from Carex trichocarpa. [Arthur]

CAREX trichocarpa (Puccinia bolleyana Sacc. uredo), *see* Puccinia bolleyana Sacc. aecidiospores (Aecidium sambuci Schw.?) from Sambucus canadensis. [Stuart]

CAREX trichocarpa (Puccinia sambuci (Schw.) Arth. [P. bolleyana Sacc.] uredo), *see* Puccinia sambuci (Schw.) Arth. aecidiospores (Aecidium sambuci Schw.) from Sambucus canadensis. [Arthur]

CAREX trichocarpa Muhl. (Puccinia sambuci (Schw.) Arth. aecidia [Aecidium sambuci Schw.] on Sambucus canadensis), *see* Puccinia sambuci (Schw.) Arth. (P. bolleyana Sacc.) from Carex trichocarpa Muhl. [Arthur]

CARLETON, M. A. and Hitchcock, A. S., *see* Hitchcock, A. S. and Carleton, M. A.

CARLETON, Mark Alfred. Cereal Rusts of the United States. U. S. Dept. Agr. Div. Veg. Phys. & Pathol. Bull. 16:1-74. Pl. I-IV. 27 Sept. 1899.

CARLETON, Mark Alfred. Culture Methods with Uredineæ. Jour. Appl. Micros. & Lab. Meth. 6:2109-2114. Jan. 1903.

CARLETON, M. A. Notes on the Life Histories of Certain Uredineæ. Science, N. S. 13:249-250. 15 Feb. 1901.

CARVER, G. W., *see* Stewart, F. C. and Carver, G. W.

CHÆROPHYLLUM procumbens (Puccinia osmorrhizæ teleuto [?]), *see* Aecidium osmorrhizæ Pk. from Washingtonia claytoni. [Kellerman]

CHENOPODIUM album L. (Aecidium ellisii Tr. & Gall.), *see* Puccinia subnitens Diet. from Distichlis spicata (L.) Greene. [Arthur]

CHRYSANTHEMUM indicum (Puccinia chrysanthemi Rose uredo on Chrysanthemum indicum), *see* Puccinia chrysanthemi Roze uredospores from Chrysanthemum indicum. [Arthur]

CHRYSANTHEMUM indicum (Puccinia chrysanthemi Roze uredo), *see* Puccinia chrysanthemi Roze uredospores from Chrysanthemum indicum. [Arthur]

CINNA arundinacea (Aecidium berberidis on Berberis vulgaris), *see* Puccinia poculiformis (Jacq.) Wettst. from Cinna arundinacea. [Arthur]

CLINTON, G. P. Relationship of Cæoma nitens and Puccinia peckiana. Bot. Gaz. 20:116-7. March 1895.

CONVOLVULUS sepium (Aecidium calystegiæ Desm. on Convolvulus sepium), *see* Puccinia convolvuli Cast. from Convolvulus sepium. [Arthur]

CONVOLVULUS sepium (Aecidium calystegiæ Desm.), *see* Puccinia convolvuli Cast. from Convolvulus sepium. [Arthur]

CRATÆGUS coccinea (Roestelia sp. ? spermogonia only), *see* Gymnosporangium globosum from [Juniperus virginiana]. [Thaxter]

CRATÆGUS crus-galli (Roestelia "lacerata z" [R. globosum Thax. as later used]), *see* Gymnosporangium globosum from Juniperus (virginiaha]. [Thaxter]

CRATÆGUS douglasii (————————? spermogonia), *see* Gymnosporangium globosum from Juniperus virginiana. [Farlow]

CRATÆGUS douglasii (———————— spermogonia), *see* Gymnosporangium globosum from Juniperus virginiana. [Farlow]

CRATÆGUS oxycantha (————————? spermogonia), *see* Gymnosporangium globosum from Juniperus virginiana. [Farlow]

CRATÆGUS tomentosa (———————— spermogonia), *see* Gymnosporangium biseptatum from Cupressus thyoides. [Farlow]

CRATÆGUS tomentosa (Roestelia lacerata), *see* Gymnosporangium clavariæforme from [Juniperus communis]. [Thaxter]

CRATÆGUS tomentosa (————————? spermogonia), *see* Gymnosporangium globosum from Juniperus virginiana. [Farlow]

CRATÆGUS tomentosa (————————? spermogonia), *see* Gymnosporangium macropus from Juniperus virginiana. [Farlow]

CUPRESSUS thyoides (————————? spermogonia on Amelanchier canadensis), *see* Gymnosporangium biseptatum from [Cupressus thyoides]. [Farlow]

CUPRESSUS thyoides (————————? spermogonia on Cratægus tomentosa), *see* Gymnosporangium biseptatum from Cupressus thyoides. [Farlow]

CUPRESSUS thyoides (Roestelia botryapites on Amelanchier canadensis), *see* Gymnosporangium biseptatum from [Cupressus thyoides]. [Thaxter]

CUPRESSUS [sp.] (Roestelia transformans (?) on Pyrus arbutifolia and (?) Amelanchier canadensis), *see* Gymnosporangium ellisii from [Cupressus sp.]. [Thaxter]

CYDONIA (quince) Roestelia nidus-avis), *see* Gymnosporangium nidus-avis Thax. from Juniperus virginia. [Thaxter]

DACTYLIS glomerata (Puccinia coronata Corda), *see* Puccinia coronata Corda uredospores from Avena sativa. [Carleton]

DISTICHLIS spicata (L.) Greene (Aecidium ellisii Tr. & Gall. on Chenopodium album L.) *see* Puccinia subnitens Diet. from Distichlis spicata (L.) Greene. [Arthur]

EATONIA sp. indet. (Puccinia coronata Corda), *see* Puccinia coronata Corda uredospores from Avena sativa. [Carleton]

ELYMUS canadensis (Puccinia graminis tritici), *see* Puccinia graminis tritici uredospores from Elymus canadensis glaucifolius. [Carleton]

ELYMUS canadensis glaucifolius (Puccinia graminis tritici), *see* Puccinia graminis tritici uredospores from Elymus canadensis glaucifolius. [Carleton]

ELYMUS canadensis glaucifolius (Puccinia graminis tritici on Elymus canadensis, E. canadensis glaucifolius, Triticum vulgare), *see* Puccinia graminis tritici uredospores from Elymus canadensis glaucifolius. [Carleton]

ELYMUS virginicus L. (Aecidium impatientis Schw. on Impatiens aurea Muhl.), *see* Puccinia rubigo-vera [P. impatientis (Schw.) Arthur] from Elymus virginicus L. [Arthur]

ERIGERON annuus (Aecidium [erigeronatum Schw.]), *see* Puccinia caricis-erigerontis Arth. from Carex festucacea. [Arthur]

ERIGERON annuus (L.) Pers. (Puccinia caricis-erigerontis Arth. aecidia), *see* Puccinia caricis-erigerontis Arth. from Carex festucacea Willd. [Arthur]

ERIGERON canadense L., *see* Leptilon canadense (L.) Britt.

ERIGERON philadelphicus L. (Puccinia caricis-erigerontis Arth. aecidia), *see* Puccinia caricis-erigerontis Arth. from Carex festucacea Willd. [Arthur]

EUPHORBIA corollata L. (Puccinia panici Diet. uredo on Panicum virgatum), *see* Aecidium pammelii Trel. from Euphorbia corollata L. [Stuart]

EUPHORBIA dentata Mx. (Uromyces euphorbiæ C. & P. uredo), *see* Uromyces euphorbiæ C. & P. uredospores from Euphorbia dentata Mx. [Arthur]

EUPHORBIA humistrata Englm. (Uromyces euphorbiæ C. & P. uredo), *see* Uromyces euphorbiæ C. & P. æcidiospores from Euphorbia humistrata Englm. [Arthur]

EUPHORBIA nutans (Uromyces euphorbiæ C. & P. uredo and teleuto on Euphorbia nutans), *see* Uromyces euphorbiæ C. & P. æcidiospores (Aecidium euphorbiæ Am. Auct. from Euphorbia nutans. [Arthur]

(To be continued)

JOURNAL OF MYCOLOGY

A Periodical Devoted to North American Mycology. Issued Bi-monthly; January, March, May, July, September and November. Price, $2.00 per Year. To Foreign Subscribers $2.25. Edited and Published by

W. A. KELLERMAN, PH. D., COLUMBUS, OHIO.

NOTES.

THE present number closes Volume 9, and hereafter the Journal will be issued more frequently; the number of pages per year will be somewhat increased. The bi-monthly series will begin the middle or latter part of January, 1904, and be issued ordinarily between the 15th and 30th day, on successive alternate months through the year.

SUBSCRIBERS will please observe that the price for 1904 is $2.00 (foreign $2.25), instead of $1.00 as heretofore. It is hoped that such support will come from the numerous professional and amateur botanists of our country and abroad, as will materially decrease the annual cash deficit.

THE Journal is not furnished at a discount to newsdealers and agencies; the subscriptions mostly come direct to the editor. Therefore a statement of dues will be mailed timely to subscribers and when payment is made a receipt returned by postal. This will obviate the necessity of laboriously holding in mind one's account, the status of which can be quickly seen at any time by reference to the postals if retained. Subscribers' names will be kept on the mailing list until ordered off.

A SEPARATE mailing list contains the subscribers for the Index of North American Mycology — and for this the plan explained in the preceding paragraph as to dues and receipts will be followed.

IT should be noted by new subscribers and others who may wish back Volumes, that Vols. I.-VII. are out of print and cannot be supplied — but the contemplated Summary Volume would in an essential manner re-place them. Moreover, the price of the available Volumes (all of the new series), namely, Vols. 8 and 9, is $2.00 each — *not* $1.00 for which amount they were originally published.

AGAIN Mycologists are cordially invited to make use of the pages of the Journal. More frequent publication will doubtless be welcomed by all, contributors as well as subscribers. MSS. should be at hand the first day of the month or earlier if feasible. Reprints, when ordered, will be furnished at cost.

GENERAL INDEX TO VOLUME 9

INDEX TO NEW SPECIES AND HOST PLANTS.

NEW SPECIES.

HOST PLANTS.